olume XXI.
Number 3.

SEPTEMBER, 1901

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TABLE OF CONTENTS, - Page 453
CLASSIFIED INDEX FOR BUYERS, - Page 655

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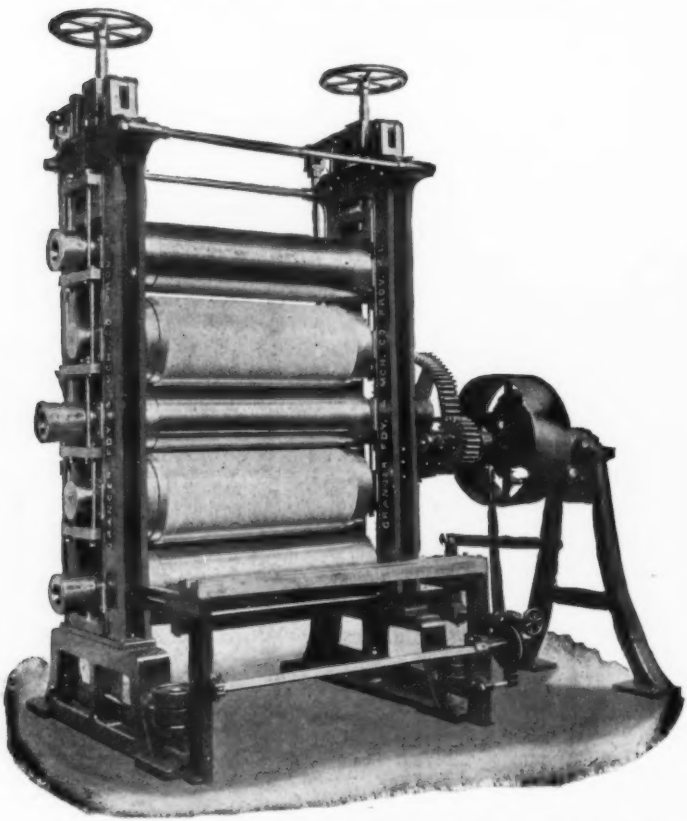
And Finishing Machinery.



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MERCERIZING MACHINES.

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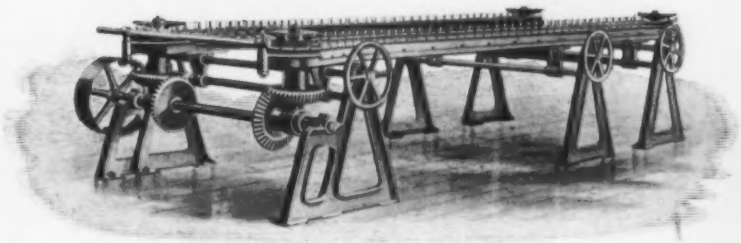

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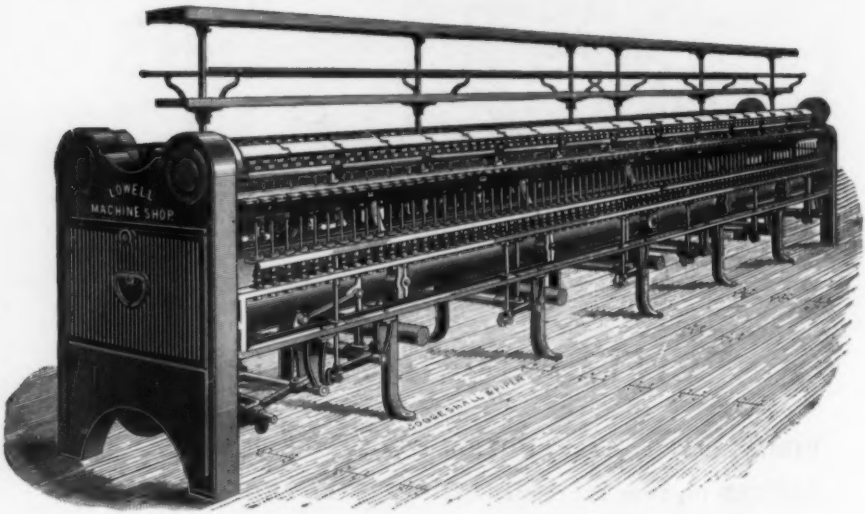

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Drawing Frames,
Roving Frames,
Ring Spinning Frames,
Twisters, Spoolers,
Warpers, Slashers,
Looms.

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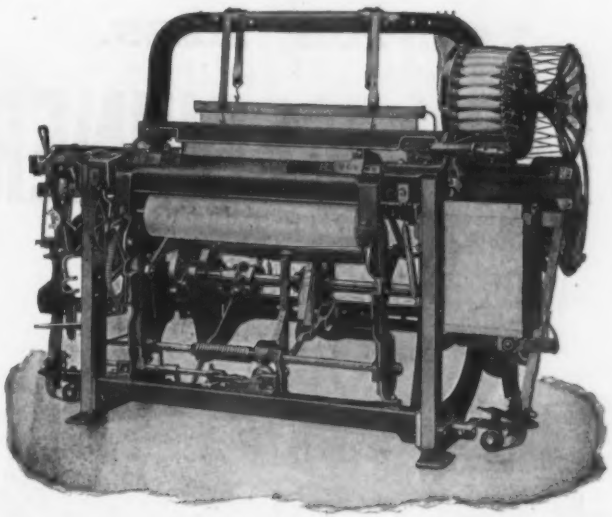

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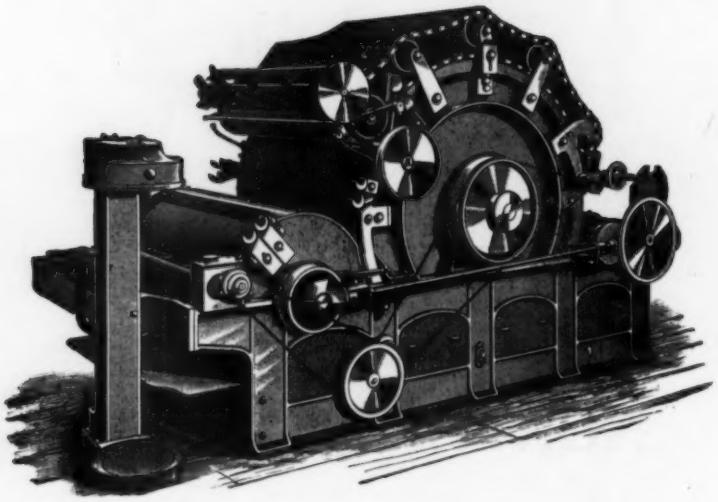

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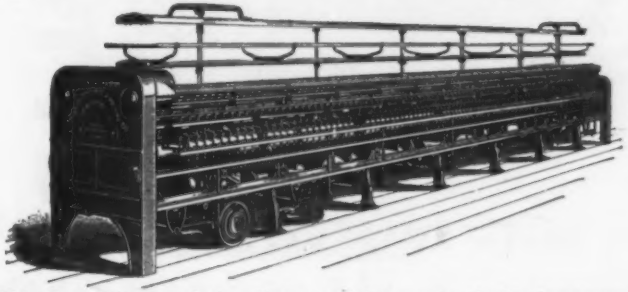

This New Pattern Spinning Frame contains many valuable improvements which will certainly interest you and pay you to investigate. All parts are specially designed and so constructed as to obtain the highest speed and greatest production.

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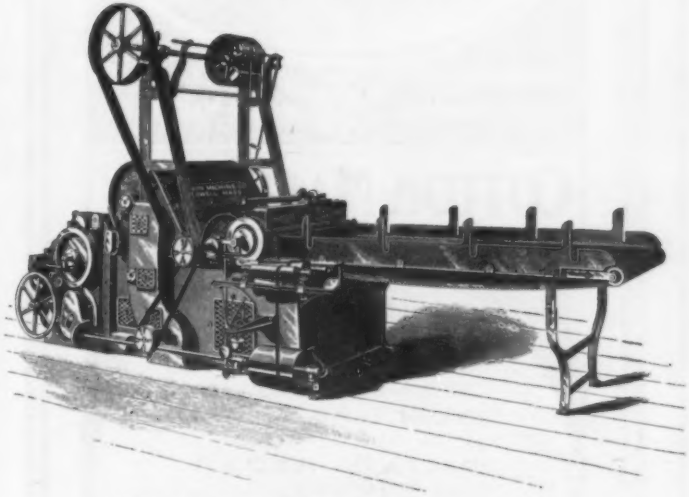

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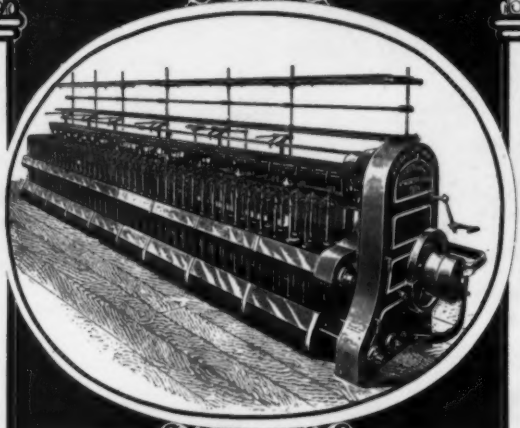

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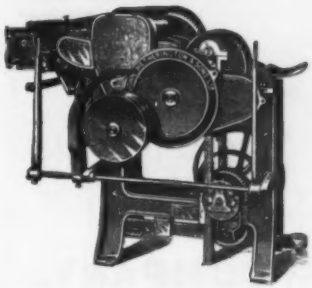
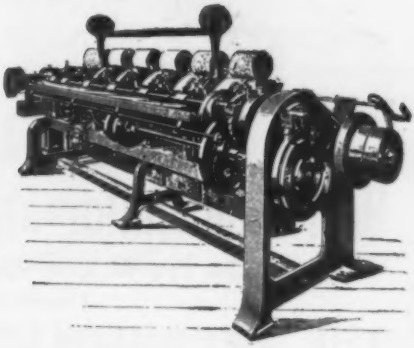
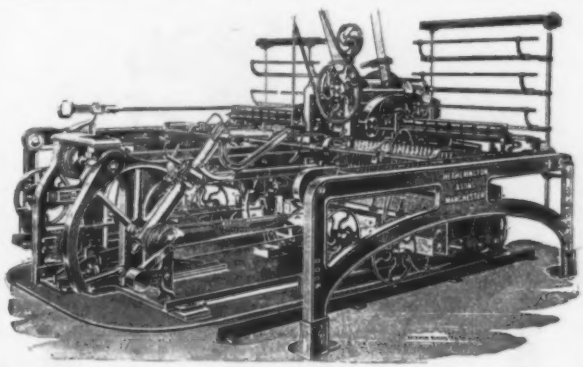




Sliver Lap Machines
with Self Acting Stop Motion.

Ribbon Lap Machines
with six Laps behind for preparing Laps for Combing Machines, made to suit any width of Laps required.

Combing Machines,
single and double Nip for six or eight heads, to take Laps from 7 1-2 in. to 10 1-2 in. wide. Patent Stop Motions for stopping Machine, when delivering too light Slivers, or after any required length has been delivered.



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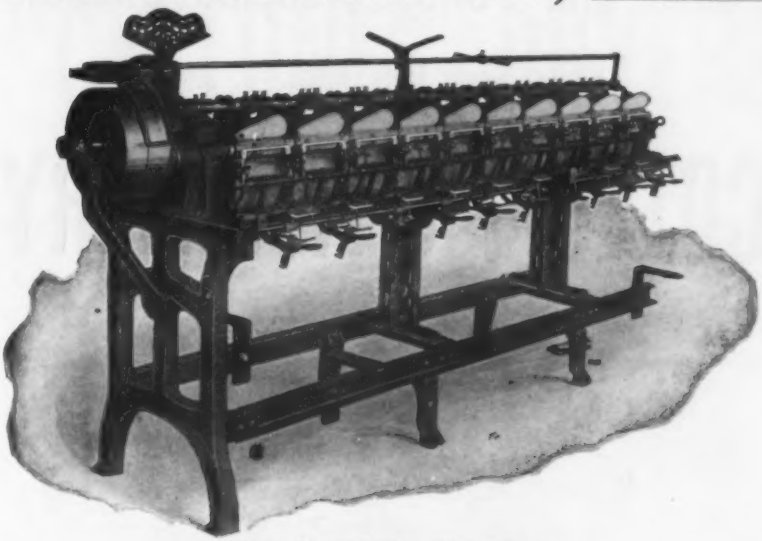

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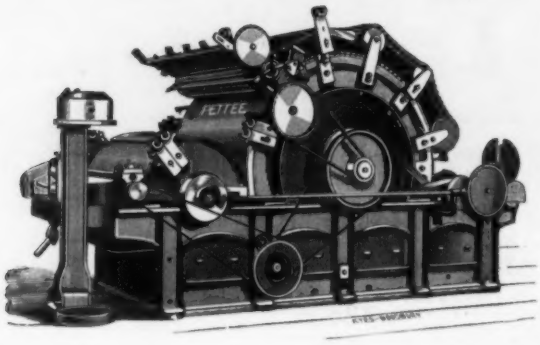

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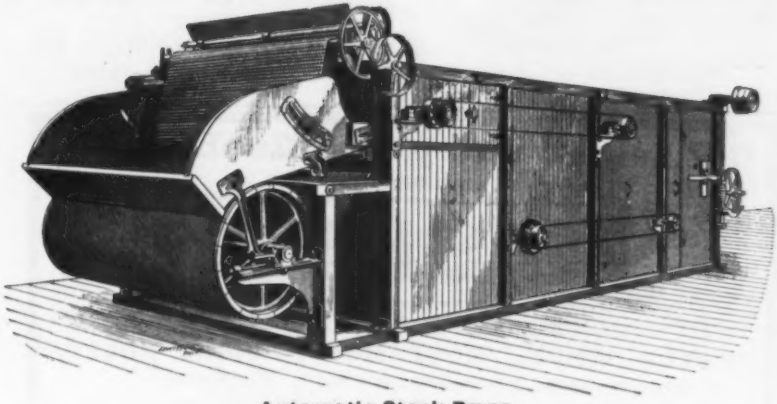

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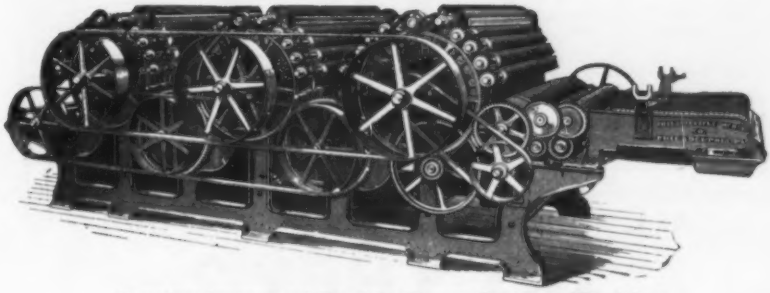

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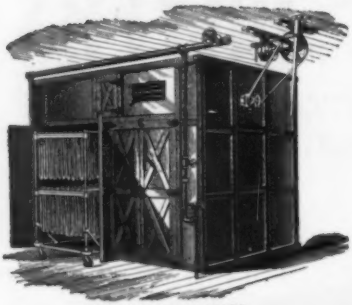

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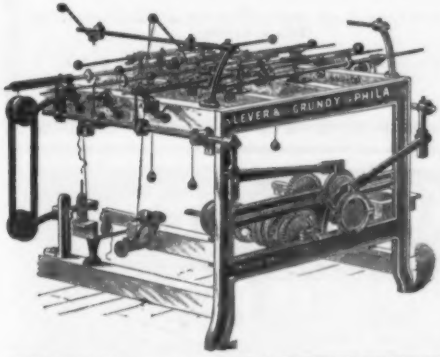

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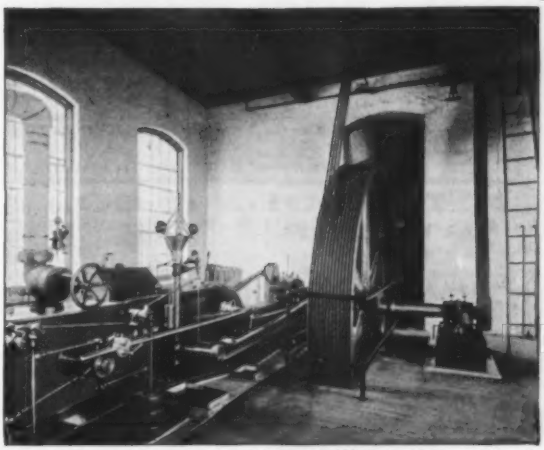

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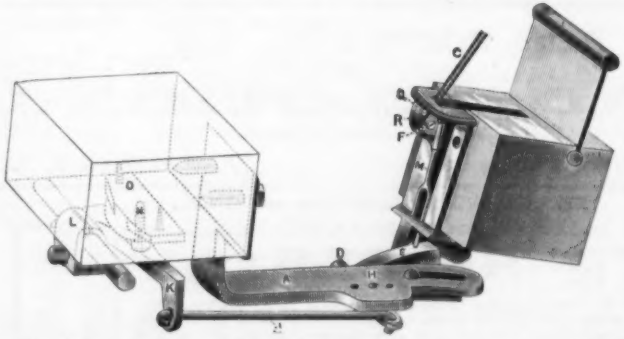

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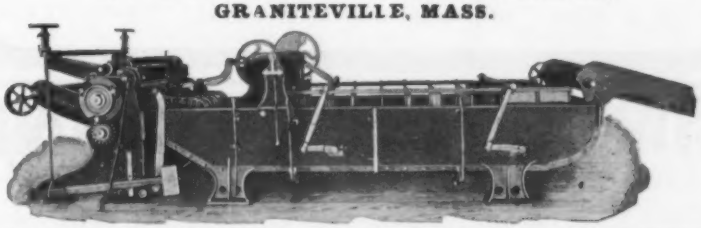

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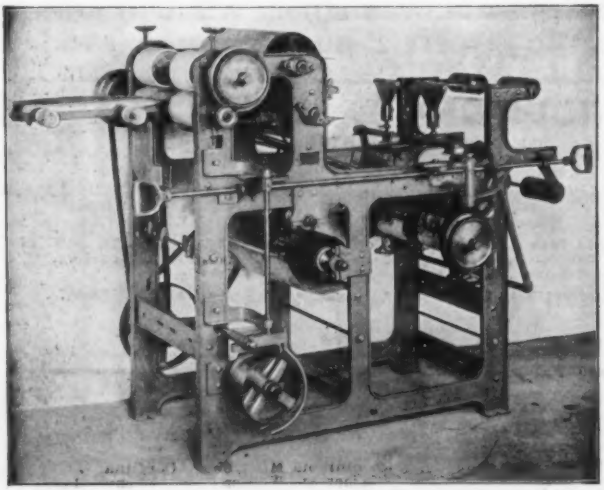

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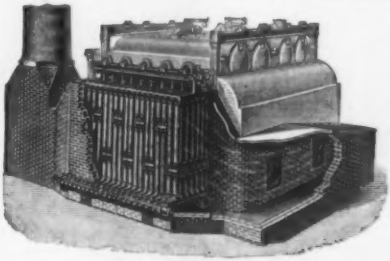

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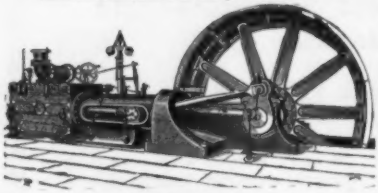

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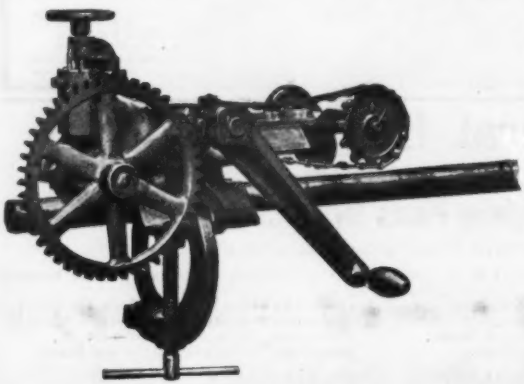

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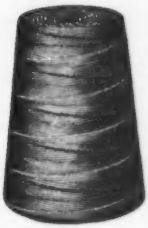

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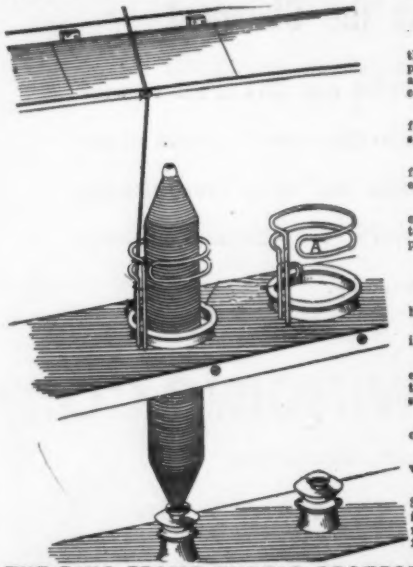

The following advantages are claimed for this protector.

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5. Frame and rail more perfectly balanced.

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8. A material saving in time of doffing, as more yarn is wound on, and longer bobbins can be used.

9. Saving of time of the operator on account of fewer ends breaking, thereby increasing the quality of yarn, and the operator can attend many more spindles in consequence.

10. The life of the ring will be prolonged on account of decreased friction.

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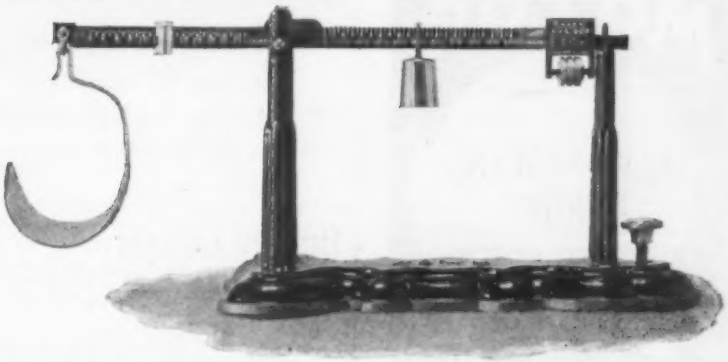

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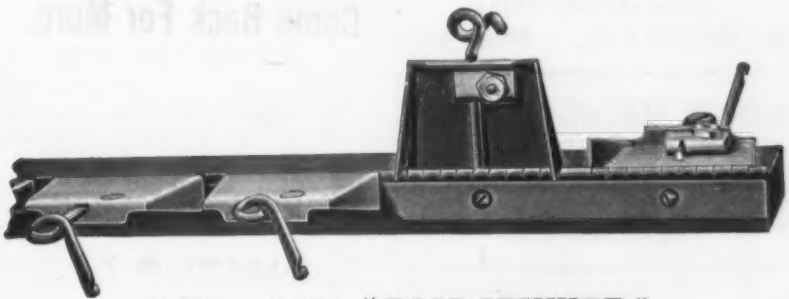

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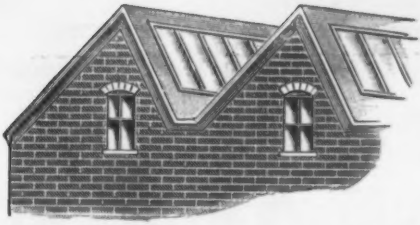

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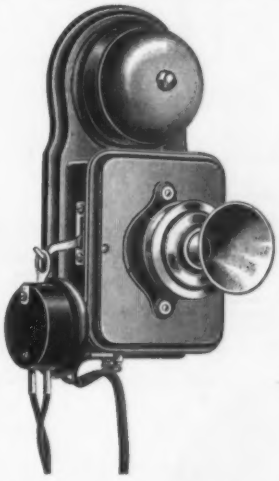

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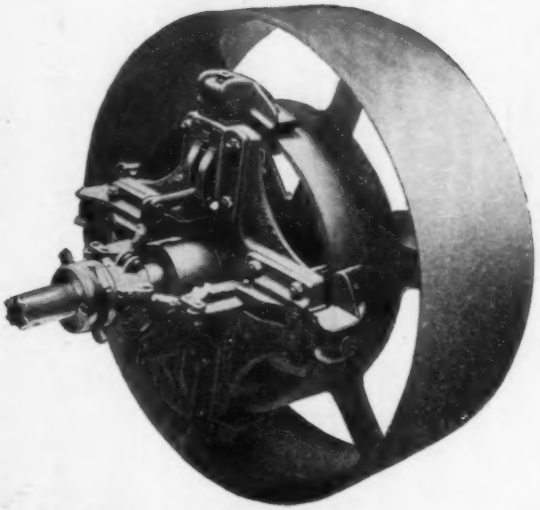

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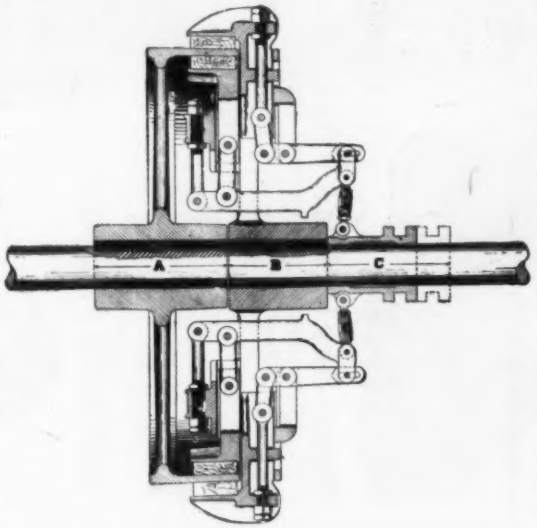

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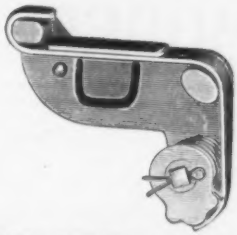

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CONTENTS.

	PAGE
Portrait and Biographical Sketch of Charles H. Adams	459
Wages at Fall River	460
Silk Frauds	461
Our Foreign Trade in Cotton Goods	462
Fine Goods Mills in the South	464
Wool Market	464
Exports and Imports of Wool and Woolens	465
Concerning Combing Wools	465
Cotton Market	466
Exports and Imports of Cotton and Cotton Goods	467
Seasonable Fabrics	468
Textile Conditions in Yorkshire	469
The Mill Operative in Japan	471
The Manufacture of Lace Curtains	471
Memoirs of a Veteran Wool Carder	472
The Process of Drying	473
The Manufacture of Shawls in India	480
Lace Makers of Calais	481
Foreign Opinion as to the Round Cotton Bale	481
Cotton Department — Comb for Medium Staple Cotton—The Art of Sketch Making—The Manufacture of Velveteen—The Card Grinder	485
Woolen Department — Finishing Wool and Mixed Fabrics—An Improved Shoddy Picker-Guard for Mule Carriage Wheels—A New Singeing Machine—A Wool Burring Device	49
Knitting Department — The Knit Goods Situation—The Production of Circular Spring Needle Knitting Machines—Ramie Knit Goods—The Loss on Imperfect Knit Goods—The Industrial Overseaming Machine	501
Silk Department — A Model Silk Dyehouse—Decorating Ribbons with Beads—Silk Fabrics and their Manufacture	509
Power Department — Transmission of Power—A Compact Direct-Connected Generating Set—The Exhibit of the American Blower Company at the Pan-American Exposition—Boiler Economy	514
Dyeing Department — Recipes—Storing Benzine—Direct Dyeing with Sulphur Colors—Coloring Cotton in a Cold Bath—Scroop on Mercerized Cotton—A Process for Ornamenting Fabrics—A New Method of Rendering Colors Fast to Water—Rendering Wool Proof Against the Coloring Action of Dyes—Tendering by Oxalic Acid—Rendering Colors on Wool Fast to Steaming	519
Questions and Answers	528
New Publications	530
Industrial News	531
Mill News	536
Personals	550
Patents	455

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List of Patents.

Issued July 30, Aug. 6, 13 and 20, 1901.

Bale of Fibrous Material. 679,831. James T. Cowley, Lowell, Mass., assignor to the Planters Compress Co., Boston, Mass.

Baling Fibrous Material, Apparatus for. 679,833. James T. Cowley, Lowell, Mass., assignor to Planters Compress Co., Boston, Mass.

Cotton Elevator, Cleaner and Feeder. 680,165. Robert S. Munger, Birmingham, Ala.

Cotton Press. 681,082. William M. Thomas, Chicago, Ill., assignor to the Thomas Cotton Company, same place.

Dye House Conveyer. 679,757. Jacob Knott, Paterson, N. J.

Dyeing Thiosulfate Colors. 681,117. Arthur G. Green, Heaton Moore and Alexander Meyenberg, Manchester, England, assignors to the Clayton Aniline Company, Limited, Clayton, Manchester, England.

Dyers' Identification Tag Apparatus. 680,877. Charles Morgan, Des Moines, Iowa.

Dye Vats, etc., Reversing Apparatus for. 680,553. John T. Travis, Paterson, N. J., assignor of one-half to Norval Bradley, same place.

Dyeing with Sulfur Dyes. 680,472. Max Becke and Albert Bell, Hochst-on-the-Main, Germany, assignors to the Farbwerke vorm Meister, Lucius & Bruning, same place.

Fabric Renovating Compound. 680,144. John Hammer, Tacoma, Wash.

Felt, Manufacture of. 680,522. Antenore Fusai, Biella, Italy, assignor to Alfredo Balada, same place.

Fibrous Products, Manufacture of. 680,079. George R. Sherwood, Kearney, Neb.

Knitting Machine, Rib. 679,641. Robert W. Scott and Harry Swinglehurst, Philadelphia, Pa., assignors to said Scott and Louis N. D. Williams, Ashbourne, Pa.

Knitting Machine Brake Mechanism. 680,829. Frank Wilcomb, Norristown, Pa.

Knitting Machine Bur-wheel Support. 680,945. Alfred Shaver, Troy, N. Y.

Knitting Machine, Circular Rib. 681,161. Louis N. D. Williams, Ashbourne and Harry Swinglehurst, Philadelphia, Pa., assignors to Robert W. Scott, Philadelphia, and Louis N. D. Williams, Ashbourne, Pa.

Knitting Machine Bur. 680,552. Ernest Tompkins, Troy, N. Y.

Loom. 679,429. Hugh R. Ross, Belfast, Ireland.

Loom, Filling, Replenishing. 680,601. John J. Lane and Louis A. Aumann, Chicopee, Mass., assignors to Draper Company, Portland, Me., and Hopedale, Mass.

Loom, Gauze. 680,502. Thomas A. Robinson, Paterson, N. J.

Loom Picker. 680,622. Frank M. Rogers and Albert A. Blakeney, Franklinville, Md.

Loom Shuttle Checking Means. 680,623. Charles F. Roper, Hopedale, Mass., assignor to Draper Company, same place.

Loom Filling Remover. 679,517. Samuel Sewall, Tewksbury, Mass; Harry Buttrick Sewall administrator of said Samuel Sewall, deceased.

Loom Stopping Device. 679,370. John Haden and Richard Howarth, Paterson, N. J., assignors of one-third to Walter Bamford, same place.

Loom Temple Roll. 679,608. Frank O. Duffy, New Bedford, Mass.

Loom Warp Stop Motion. 11,923. Joseph Coldwell and Christopher G. Gildard, Fall River, Mass.

Loom. 680,743. Edward S. Stimpson, Hopedale, Mass., assignor to Draper Company, same place.

Loom. 680,778. Oscar Janelle, Manchester, N. H., assignor to Draper Company, Portland, Me., and Hopedale, Mass.

Loom Needle. 681,004. Halcyon Skinner and Frank H. Connolly, Yonkers, N. Y. Albert L. Skinner and Charles E. Skinner executors of said Halcyon Skinner.

Loom Shuttle Tension Device. 680,682. Alfred Baldwin, Goffs Falls, N. H.

Loom Thread Parting Mechanism. 681,069. James H. Northrop, Tustin, Cal., assignor to Draper Company, Portland, Me., and Hopedale, Mass.

(Continued on page 536).

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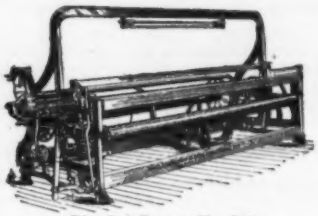

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But don't forget that we build other looms, notably blanket looms, and other looms for heavy goods, also narrow looms.

Our pattern No. 128 is a strong, substantial loom of best material, and adapted, with modifications, to weave blankets, table covers, paper makers' felt and heavy cloth.

Our standard widths are 49, 92, 100 and 115 inches, reed space.

Particulars of a loom 115 inches in the reed space: Revolutions to pick, 2; picks per minute, 80 and above; h. p., 1; floor space, 15x5 feet; weight, 2,300 pounds.

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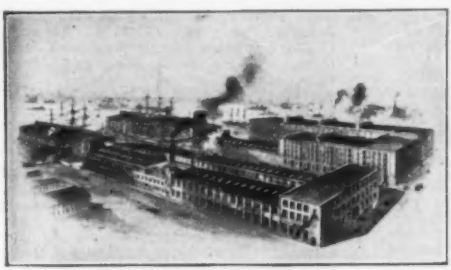

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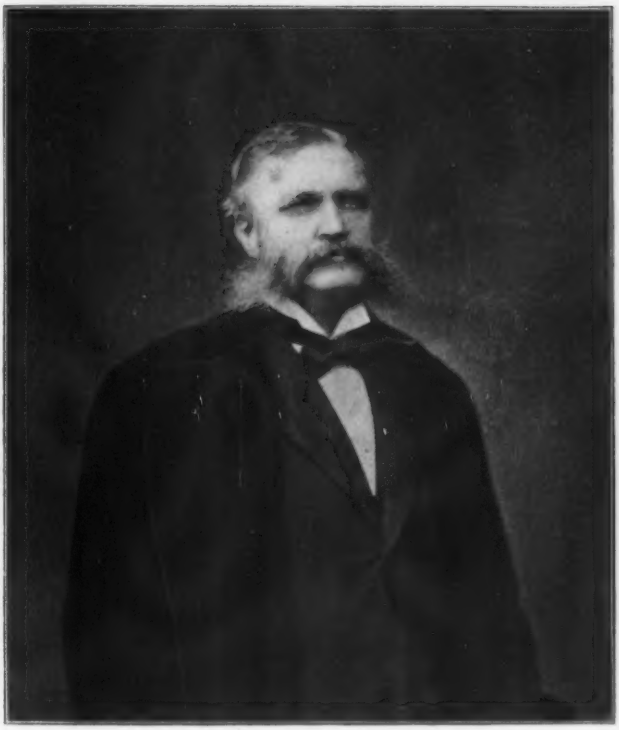


CHARLES H. ADAMS.

TEXTILE WORLD.

Vol. XXI. SEPTEMBER, 1901. No. 3.

CHARLES H. ADAMS.

The subject of this sketch was born at Coxsackie, Greene County, New York. At the age of twenty-one he was admitted to the bar and practised law for a few years. In 1852 his uncle, Egbert Egberts, the inventor of the power knitting machine and the owner of the first knitting mill erected in this country (1833), having built a new mill, then and now called the "Watervliet," invited Mr. Adams to come to Cohoes and engage in the manufacture of knit goods and transferred to him as a gift the recently built mill.

Mr. Adams formed a co-partnership with Sherman D. Fairbanks and commenced business with four sets of carding machines and the other necessary knitting mill machinery. These were gradually increased to thirteen sets.

Aside from the original flat frames, the only ones then in use, they built six warp machines which proved very profitable. They were also the first manufacturers to utilize the sewing machine. All goods previously made were sewed by hand and necessitated the employment of a large number of women located in various parts of the then village of Cohoes. Cuffs, or ribs as they were then called, were then all made on imported hand machines and made well, but were expensive. Jacks were then used for spinning and performed about two-thirds the work of the present mule, and did not do it as well. Innovations and improvements of all kinds have gradually been made in the manufacture of knit garments, until now the present high state of the art is in strong contrast to the conditions existing when Mr. Adams started in business.

He continued running the mill very successfully for about ten years, until the death of Mr. Fairbanks, when the machinery was sold and the mill leased to Alden, Frink & Weston, Mr. Adams built another mill on Ontario street, Cohoes, which he called the Egberts' Woolen Mill. This was originally intended for a flannel mill and for a time Mr. Adams manufactured cloth and flannels, but subsequently turned it into a knitting mill, manufacturing a line of very fine goods until his retirement from active business in 1870.

The city of Cohoes owes much of its prosperity to the energy and business sagacity of Mr. Adams, and, when it was incorporated as a city in 1870, he was elected its first mayor. He served for several years as president of the Water Board and trustee of the village. He was also for more than twenty years president of the National Bank of Cohoes.

Mr. Adams has been a prominent factor in state and national politics. In 1851 he was appointed on the staff of Governor Hunt with the rank of Colonel; in 1857 he was elected to the Assembly, and to the State Senate in 1872-3. In 1868 he was elected by the Republican party as a district presidential Elector. In 1873 he was appointed a U. S. commissioner to the Vienna exhibition as a representative American manufacturer.

In 1876 the Centennial of the Declaration of Independence, Mr. Adams was a member of the forty-

fourth Congress. At the close of his congressional term, declining any further political preferment, he retired to private life and is now a resident of the city of New York.

WAGES AT FALL RIVER.

The continued decline in the price of print cloths led the manufacturers of Fall River, with one exception, to propose a reduction of 15 per cent. in the wages of their operatives, as a means of reducing the cost of their goods. The agitation of that question brought home to the manufacturers that the remedy proposed was not the right one, and it was soon abandoned. Until within recent years the cost of cotton and the price of print cloths was accepted by both the mill owner and operative as a fair basis upon which to adjust wages.

At first the cost of 8 pounds of middling upland cotton, plus 45 cents for labor and expense, was assumed as the cost of one cut (45 yards) of 28-inch goods. The difference between this estimated cost and the selling price of 45 yards of 28-inch, 64x64 print cloth indicated the margin of profit or loss to the mill. As the quantity of wider goods manufactured in the mills increased, the selling price of 22 1/2 yards of 28-inch 64x64 print cloth and 16 36/100 yards of 38 1/2-inch 64x64 was substituted for the selling price of 45 yards of the narrow fabric, and remains the basis today on which the supposed margin of profit is calculated.

The production of print cloths increased, causing a decline in price, which reached 1 7/8 cents for 28-in. 64x64, in 1898. This grade is now selling for 2 10/16 cents per yard. Meantime the production of the mills has become greatly diversified, until today these two styles of print cloths comprise much less than one-half of the product of the Fall River mills.

A corresponding modification of the basis of calculation was not practicable, owing to the great variety of goods and the wide range of prices, which were known only in the individual mill where the goods were made. Twenty-eight and thirty-eight inch print cloths had ceased to be fair basis upon which to adjust wages.

The production of the Southern mills came in direct competition with these goods, and the mill owners were brought to the point where cost must be reduced, if a loss was to be avoided.

It cannot be denied that at the present time a reduction of wages in the United States is not the order of the day. The country is prosperous; labor is well employed at fair wages, and while there are signs that production in many lines is in excess of demand, general business remains good.

On general principles the wages of labor should rise or fall with the increase or decrease of the profits of manufacturing. This, however, is a principle of broad application and cannot be applied to special lines where unusual conditions prevail. If a great demand should spring up for a new cloth, of which there was but a small supply, causing the price of that one fabric to rise to a high point, it would be manifestly absurd for operatives in the mills equipped for the production of this special grade to demand a corresponding increase in wages. On the other hand when the production of one line of cotton goods is so far in excess of the demand that prices are depressed below the general level of the market for cotton goods, it is equally out of the question to ask the operatives to submit to a reduction of wages in order that the cost of the goods may be kept under the abnormally low price of goods. The operatives stand ready to work on any class of goods selected by the mill managers. They have no choice and, speaking broadly, no preference as to the grade of goods manufactured. If the market price of plain print cloths has by reason of overproduction, been depressed

below the level of the rest of the market, that is something for which the operatives are in no wise responsible.

This view is now accepted by the mill owners themselves, and accounts for the abandonment of the proposed reduction of wages. If there is an overproduction of goods the proper remedy is a curtailment of production. But the claim of overproduction was contradicted most emphatically by one very large and prosperous mill, whose owners scouted the idea of reducing wages, boasted of their ability to quickly dispose of any stock of goods that might accumulate on their hands, and offered to purchase the surplus goods of the other mills. This mill had no better machinery than the other mills had. Its only advantage was the possession of its own print works.

The finished product of the ordinary plain print cloth mills is plain gray cloth, which is sold as a raw material to converters, who send it to the bleach and print works, from which it comes as a finished product, this time in the shape of printed goods. The disadvantages of this method of doing business consists not only in the additional expense of handling, brokerage and the cost of printing, which are important items, but in the fact that the mill without its own print works is required to keep their goods up to an arbitrary standard of quality, while the mill operating its own print works is able to make changes in fabric and quality, which do not impair the selling qualities nor the value of the goods, but do result in a considerable reduction in cost. For these reasons the mill and print works combination is able to make a profit at prices that mean only loss for the other manufacturers. It was because of these advantages that one firm stood out in strong contrast to the others in the recent wage agitation at Fall River. This mill ran full time when the other mills were shutting down, declined to entertain the idea of reducing wages, even proposed to purchase the surplus stock of goods from the other mills. Southern competition had no terrors for this mill with its print works. The contrast pointed out unmistakably the remedy to be adopted by the plain goods mills. With their own print works the finished product would be printed fabrics, and the manufacturers would not be required to keep the fabric to an arbitrary and, in the broad sense of the word, unnecessary standard at an intermediate stage in the process of manufacturing. Nothing has demonstrated so plainly to the public the economical advantage of industrial combination as the contrast at the present time between the Fall River mills without print works, and those mills which are provided with that useful adjunct.

SILK FRAUDS.

The custom officials at the port of New York have discovered what they believe to be extensive frauds in connection with the importation of silk goods. The method said to have been adopted, was the old and familiar one of bribing the custom house weigher, who reported the goods at much less than the actual weight. The frauds were discovered through the complaints made by firms in the silk trade that they were being undersold. A transfer of weighers at the custom house then revealed large invoices which were entered as weighing from 20 to 30 per cent. less than the actual weight. In addition to this, there were many cases containing a small quantity of goods subject to a low duty, the balance being subject to high rates, while the whole amount was entered at the low duty. At the present writing about $64,000 worth of goods have been seized.

OUR FOREIGN TRADE IN COTTON GOODS.

The value of our exports of raw cotton during the year ending June 30th, 1901, was greater than for any similar period, excluding the period during and right after the civil war, when the value of this staple was abnormally enhanced. We shipped to foreign parts in these twelve months in round figures 3331 million pounds of cotton, valued at $314,000,000.

The greatest value of raw cotton exported during any similar period was in 1891, just ten years ago, when it reached $291,000,000. In both of these years this increase of value was caused, not by an increase in the quantity of cotton exported, but by the then prevailing high price per pound, averaging 10 cents in 1891 and 9 41/100 cents in 1901.

During the latter year we imported 47,000,000 pounds of fine long stapled cotton valued at $6,800,000 or 14½ cents per lb. The accompanying diagram will bring to the mind of the reader the comparative importance in the value of our imports and exports of raw cotton during the fixed year just closed.

The weight of cotton exported in previous years has exceeded more than once the figures for 1901. In 1895 we shipped 3517; in 1898, 3850, and in 1899, 3773 million pounds of cotton. During these years the average price per pound was but 5 8/10, 6 and 5½ cents respectively. This, from a financial standpoint, is a very satisfactory showing for America. Compared with 1899, we sold to the rest of the world in 1901, 442 million pounds less of raw cotton and received $104,000,000 more for it.

In the wide economy of human affairs the advantage of such a change is open to doubt. The hundred millions of human beings throughout the world who clothed themselves in 1899 with cotton cloth made from 5½ cent cotton may not grow enthusiastic over the change by which they were compelled in 1901 to substitute cloth made from 9½ cent cotton. It is, however, the habit for nations to view trade matters from a selfish standpoint and the figures for 1901 are, consequently, a source of gratification to Americans.

Our supremacy in the cotton growing industry is not seriously menaced. Attempts, stimulated by the high price of cotton, are now being made in various parts of the world to establish cotton raising. Russia is making a good showing toward supplying the home mills with domestic cotton. Aside from this there has been no marked increase in the raising of cotton since the cotton famine during the civil war resulted in the establishment of the industry in Egypt and its extension in India.

During that war the outside world was practically deprived of American cotton, and the most persistent efforts

RAW COTTON.

Twelve months ending June 30, 1901.

Imports.	
Weight, lbs.	46,631,125
Value	$6 787,813
Exports.	
Weight, lbs.	3,330,890,448
Value	$313,673,443

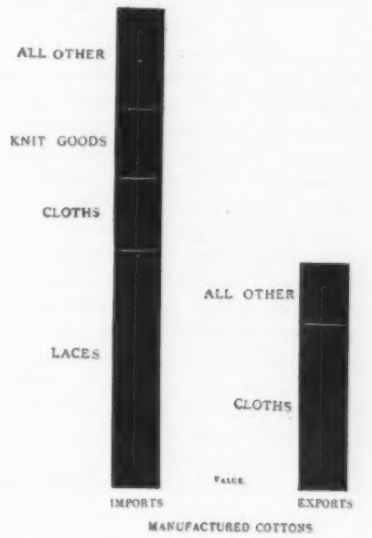
were made to grow the staple elsewhere. Except in India and Egypt no success followed these attempts. The soil of Egypt proved to be better suited than our own for raising fine, long-stapled cotton, but owing to the necessity for artificial irrigation, the Egyptian crop will always be comparatively small, while the Indian

cotton is short and in every way inferior.

For many years our people have consumed more cotton than any other nation. During this time the mills of Great Britain have held first place in respect to the quantity of cotton converted into yarn and cloth. The English mills, however, manufactured for export while nearly all of the cotton goods made in American mills were used at home. Even this pre-eminence has recently disappeared, for in 1900 the mills of the United States used more cotton than did those of Great Britain.

While our mills have consumed more raw material than any other nation, the fabrics produced by these mills have been in excess of the requirements of our own population. This is shown by the condition of our domestic cotton markets, where stocks of woven and knitted goods have depressed prices below the cost of manufacture. There is a pressing need for wider markets to take the surplus product of our cotton mills, and yet, in spite of this fact we are importing over two dollars' worth of cotton goods for every one dollar's worth that we export. In the twelve months ending June 30th, 1901, our exports of cotton goods amounted in value to $19,200,000, while during the same period the imports of manufactured cottons were valued at $40,279,000. The value of the lace goods alone imported into this country last year was greater than that of all the cotton goods exported. With many of our cotton mills idle this is an anomalous condition of trade, and is calculated to temper the enthusiasm caused by viewing the valuation of raw cotton exported in the same twelve months.

The following diagram representing the comparative value of our imports and exports of manufactured cottons will bring to the mind of the reader the actual condition of this foreign trade much better and quicker than words or figures can.



COTTON GOODS.

Twelve months ending June 30, 1901.

Imports.	
Laces, value	$20,234,466
Cloths	6,116,605
Knit Goods	5,461,704
All other	8,420,007
	$40,232,782
Exports.	
Cloths, value	$14,136,037
All other	4,933,131
	$19,069,168

—Reports from Japan state that the cotton-spinning industry in that country has been in an embarrassed condition for the past three and a half years. The evil results of the tendency to over-expansion after the China-Japan war and above all, lack of sufficiently large capital funds are acutely felt. The year 1900 was in particular a very bad year for cotton spinning in a country which finds the principal outlet for its yarns in China. A German company is rumored to have been formed, with a capital of 5,000,000 yen, to engage in cotton spinning in Japan.

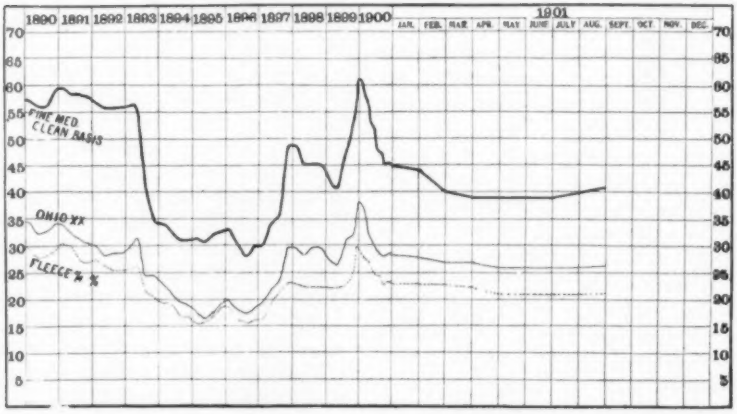
—The value of silk goods manufactured in the Lyons district of France in 1900 amounted to $85,180,550.00. This is a reduction of about 2 per cent. as compared with the preceding year.

FINE GOODS MILLS IN THE SOUTH.

We have recently learned of several enterprises which are contemplated in the South for the production of fine cotton goods. It has been clearly demonstrated during the last few months that the production of the lower grade of goods is greatly overdone. This is due chiefly to the rapid increase of Southern mills adapted for the production of low counts. Today there is no market for the product of new mills on these low graces; in fact there is not sufficient demand for such goods to keep the mills already built in operation. The case is somewhat different with fine goods, and here the question arises as to the ability of the Southern operatives to make these finer grades. The raw material and requisite machinery can be obtained and there is a large supply of help, but it is not skilled help, and upon the skill and efficiency of the operatives depends the success of manufacturing these fine goods. The necessary skill cannot be quickly acquired by green hands whether in the North or South. It takes much time for an employee to become skilled in any of the various processes even when this training takes place in a well organized fine goods mill where the employee is surrounded by skilled hands and sees the work done well day in and day out.

We do not wish to say anything to unduly discourage any Southern enterprise in the direction of making fine goods, but promoters of such mills in the South should not underestimate the difficulty of teaching their help to make these goods properly. We find industries concentrated in great centres and held there by the presence of skilled help, although other sections of the country may possess superior advantages for manufacturing. Eventually fine goods will be manufactured largely in the South, but before it is done many years must elapse during which the Southern operative is slowly trained in the difficult processes.

WOOL MARKET.



Wool is higher and holders of wool are firm in their ideas of values. There are indications of a revival of speculation which has done so much in the recent past to demoralize the market for both raw material and finished goods. The present improvement, is, however, the result of a healthy condition of business.

The bulk of the new clip has passed into the possession of dealers who are in no hurry to part with it.

except at an advance from cost price. The light weight season in the goods market has opened favorably. Large orders have been booked at prices, which, compared with the quotations for wool, are relatively higher than the prices of one year ago. While the larger mills are well stocked with raw material, there are many smaller concerns, which in the aggregate comprise a larger part of the woolen and worsted machinery in the country, that have waited until orders on goods were secured before they made purchases of raw material. These smaller concerns are now in the market for wool, and find it necessary to pay full prices to cover their orders.

Territory wools have shown the greatest relative improvement. There are no weak spots in today's market. On the other hand, the demand from the mills is confined to present needs and what little speculative disposition is shown, is confined entirely to dealers. One result of the past year's decline in wool prices is the increased demand for better goods. While cotton worsteds are still called for in large volume, these fabrics are by no means as popular as was the case last year.

EXPORTS AND IMPORTS OF RAW WOOL, YARN AND WASTE.

Lbs. in units of one million. Value in units of $ 00,000.

Year Ending June 30.	Exports.		Imports.					
	Wool.		Wool.		Shoddy Noils, etc.		Yarn.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
1890	.231	.335	106.3	152.6	5.0	20.5	3.5	19.9
1891	.291	.394	129.3	182.4	1.2	4.3	2.0	11.9
1892	.202	.306	148.7	196.9	.3	.9	1.3	7.5
1893	.091	.148	172.4	210.6	.3	1.1	1.2	6.9
1894	.520	.906	55.2	61.1	.1	.5	.5	3.6
1895	4.289	4.844	192.8	229.9	14.1	19.8	2.4	11.7
1896	6.945	8.559	228.4	315.0	18.7	28.5	2.0	10.5
1897	5.270	6.199	366.6	567.5	49.9	69.3	1.8	9.6
1898	.121	.180	132.8	167.8	3.3	6.9	.3	1.9
1899	1.683	2.373	76.7	83.2	.3	.7	.2	1.1
1900	2.200	3.872	155.9	202.6	.4	.9	.2	1.8
1901	.200	.240	104.0	125.2	.6	1.8	.2	1.5

EXPORTS AND IMPORTS OF MANUFACTURED WOOLENS.

Value in units of $100 000.

Year Ending June 30.	Exports — Value.						Imports — Value.							
	Carpets.	Dress Goods.	Flannels and Blankets.	Apparel.	Other.	Total	Carpets.	Cloths.	Dress Goods.	Shawls.	Clothing	Knit Goods.	Other.	Total.
1890	.067	..	.409	3.179	.719	4.374	7.5	161.4	242.0	10.1	18.4	19.8	66.2	525.4
1891	.184	..	.265	4.240	.502	5.191	13.7	120.3	182.4	7.2	18.6	12.5	39.7	394.4
1892	.093	..	.244	2.689	.649	3.675	12.9	127.6	164.7	3.5	14.8	11.6	12.1	347.2
1893	.115	..	.242	2.224	.679	3.260	15.8	151.2	164.8	2.8	11.7	14.1	12.0	372.4
1894	2.500	..	.387	3.172	1.685	7.744	9.6	87.6	85.8	1.6	8.6	10.0	7.2	190.4
1895	1.610	..	.498	3.161	1.432	6.701	13.6	163.0	144.0	2.0	10.0	9.4	11.8	353.8
1896	2.252	..	.370	3.653	2.860	9.135	8.9	218.9	199.3	4.5	13.0	25.4	27.4	497.4
1897	1.895	..	.573	3.858	3.150	9.476	7.8	170.1	167.9	4.6	9.8	25.3	27.0	412.5
1898	1.642	.414	.474	4.290	4.074	10.89	17.9	89.6	60.4	.4	7.6	3.9	9.6	139.4
1899	.811	.169	.427	5.388	3.679	10.47	17.6	39.1	59.1	.5	8.3	6.3	5.6	136.5
1900	1.150	.244	1.002	5.654	4.485	12.54	27.5	51.3	58.7	.8	9.9	5.0	6.3	159.5
1901	1.051	.082	1.230	8.060	5.005	15.43	27.0	39.6	53.7	.8	11.7	4.1	8.3	142.2

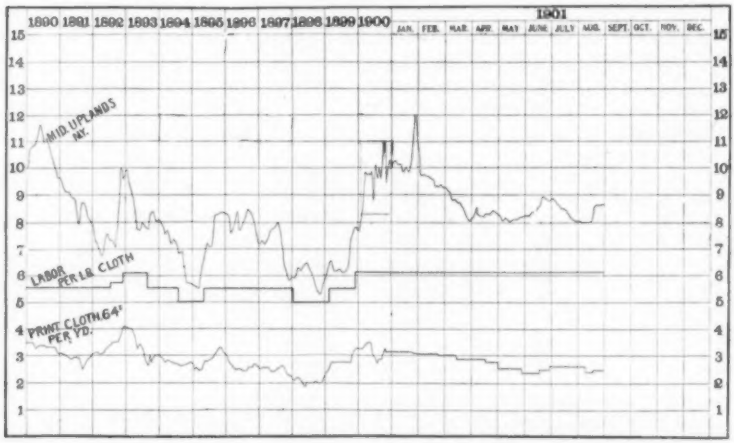
Concerning Combing Wools.

Generally speaking, the importation of carpet combing wools since the latter part of '99 has been merely nominal save in sporadic cases where Cordova and Scotch have been purchased direct and come into this country without the aid of the middleman. The large variety from which a buyer could make his selections has practically disappeared, and the stock on hand at that time has so greatly diminished that indications seem to point toward the renewal of importation in this class of wools. To be

sure, some lots of Awassi, Karradi and Mossoul have been dignified by the name of Aleppo and offered as such, but sales will be few, inasmuch as this stock is not fit for the purpose for which carpet combing is required.

The combing wools which generally come in through the importer are Damascas, Angora and washed and unwashed Aleppos. Cordova and Scotch are also in this class, but as they are generally sold direct, they will not affect the movement which seems to tend now toward fresh importation. The quotations on these wools today are about ½ cent less than the cost of landing them in this country, but users will probably be forced to pay the difference. They are already disposed to pay the prices asked and as the imported carpet combing wools cannot get here much before the spring of 1902, a considerable demand may be expected before that time.

COTTON MARKET.



A slow sale for cotton goods and the prospect of a large cotton crop are the main factors that have controlled the cotton market during the past month.

The bright crop prospects have been somewhat dimmed by the drouth in Texas. It is estimated that this year's yield from that State will not be over 80 per cent. of last year's crop. Even if such an estimate should be verified by future developments, the increased acreage planted this year would more than offset the influence of the loss above named.

During the latter part of the month prices advanced sharply upon reports of crop damage. Advices from the field state that there is no lack of pickers, and the gathering of the cotton is proceeding rapidly.

The cotton goods market throughout the world is depressed. European advices are particularly unfavorable. The Continental markets are in the poorest shape, but English mills are by no means occupying a strong position as regards orders for goods.

In the domestic markets trade in manufactured cottons has not improved since our last writing. The position of print cloths is hardly a fair index for the general market, as the market for those goods has been the greatest sufferer from overproduction. The yarn market occupies a position similar to prints. The trade in other lines does not show the same degree of depression, but is by no means satisfactory.

Production of cotton goods in the United States has reached a point

where prices for some lines are fully as low as the prices for similar goods in foreign markets. The domestic demand does not seem capable of absorbing more goods, and the American mills are at the point where foreign trade must be secured, if mill extension is to continue.

The same complaint of overproduction of cotton goods comes from every quarter of the world, and this has served to keep the quotations for the staple down. The Chronicle reports the world's visible supply of cotton Aug. 30th, 1901, at 1,569,588 bales, as compared with 1,048,959 bales at same date in 1900, 2,596,864 bales in 1899, and 2,045,911 bales in 1898.

EXPORTS AND IMPORTS OF RAW COTTON AND WASTE.

Lbs. in units of one million. Value in units of $100,000.

Year Ending June 30.	Exports.									Imports.				
	Sea Island.		Other.		Total.			Cotton Waste.		Raw Cotton.			Cotton Waste.	
	Lbs.	Value	Lbs.	Value.	Lbs.	Value.	Value, per lb.	Lbs.	Value.	Lbs.	Value.	Value per lb	Lbs.	Value.
1890	9	23	2462	2486	2471	2509	10.15	..	..	8.6	13.9	16.16	..	..
1891	14	31	2893	2876	2907	2907	10.00	..	..	20.9	28.2	13.49	..	..
1892	19	16	2926	2568	2945	2584	8.77	..	..	28.7	32.1	11.18	..	..
1894	8	17	2204	1870	2212	1887	8.53	..	..	43.4	46.9	10.80	1.9	.8
1894	14	29	2669	2080	2683	2109	7.82	..	..	27.7	30	10.83	2.7	.9
1895	15	28	3502	2021	3517	2049	5.82	..	..	49.3	47	9.53	2.9	1
1896	19	38	2316	1962	2335	1900	8.13	..	..	55.3	66	11.93	6	2.1
1897	21	41	3082	2268	3103	2309	7.12	..	.	51.9	59	11.36	5.3	1.7
1898	16	28	3834	2277	3850	2304	5.98	19.1	7.9	52.7	50	9.48	6.7	1.5
1899	14	24	3759	2072	3773	2096	5.55	21.1	8.3	50.2	50.1	9.98	6	2.1
1900	18	30	3082	2388	3100	2418	7.80	38.6	17.7	67.4	79.6	11.81	7.9	2.4
1901	11	22	3320	3137	3331	3137	9.41	50.6	26.3	47.0	68.0	14.43	6.2	1.9

EXPORTS AND IMPORTS OF MANUFACTURED COTTONS.

Value in units of $100,000.

Year Ending June 30	Exports — Value.					Imports — Value.							
	Colored.	Uncolored.	Apparel.	Other.	Total.	Colored.	Uncolored.	Apparel	Laces, etc.	Thread.	Knit Goods.	Other.	Total.
1890	29	55	2	14	100	33.7	1.8	3.4	114.5	9	71.5	65.8	299.2
1891	26	93	3	15	137	42.4	1.7	12	105.9	8.6	67.4	59.2	297.2
1892	25	87	4	16	132	45	1.4	12.6	112.5	6.6	58.3	46.7	283.1
1893	28	63	5	22	118	55.4	2.6	16.8	127.4	7.6	63.9	61.8	335.5
1894	38	76	5	24	143	33.8	1	16.6	80.2	3.3	43.6	45	223.5
1895	35	70	5	28	138	54.3	1.2	27.7	116.9	6.6	65.4	39.9	332
1896	34	95	7	32	168	49.2	1.8	26.8	108.8	8.7	61.9	67.1	324.3
1897	48	125	9	29	211	44	2.7	26.3	125.7	6.5	56	83	344.2
1898	41	92	9	25	167	53.1	1.2	10.5	117.7	6.9	40.3	42.9	272.6
1899	52	138	13	30	233	66.5	1.1	10.3	145.5	8.5	43.4	45.3	320.6
1900	48	132	16	37	233	81.6	3.6	12.4	192.1	21	47.2	55.3	413.2
1901	66	76	17	33	192	59.2	2.0	15.3	202.3	17.5	55.0	51.4	402.7

—It has been suggested to us that the description of the knitted garment which appeared on pages 77 and 78 of the July number of the Textile World did not state sufficiently clear that this is a patented invention, covered by patent No. 672,028 issued to R. M. Appleton, 24 Kingston street, Boston.

—The woolen and worsted looms of Germany have heretofore been operated as a rule with one weaver to each loom. The attempt is now being made in the district of the lower Rhine to introduce the two loom system, by which each weaver would tend two machines. Strikes have resulted, but the depressed condition of the German market for woolen goods is likely to result in this economy being brought about.

Seasonable Fabrics.

WOOLEN GOODS.

While there has been no great hurry on the part of buyers to place orders on worsted and woolen fabrics, the volume of business so far done has been on the whole fairly satisfactory.

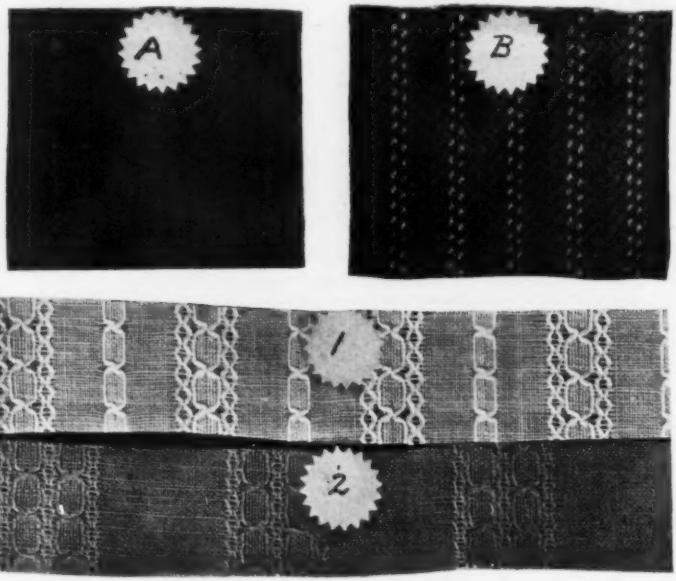
An advance of 5 cents per yard has been made by the American Woolen Co. on its piece dyes, and other trifling advances are also reported elsewhere.

In the line of fancies for men's wear, cheviots and soft finished cassimeres have sold fairly well. Flannels are also considered favorably for the coming season and their popularity is practically guaranteed.

Fred. Almy & Co. are showing a line of flannel suitings which has sold well at 90 cents regular; 55 inches wide. Fig. A represents a style of the "Assabet" flannels from the line of the American Woolen Co., which opened at $1.02½ regular, 6/4 width, and was sold up in a very few days. Their last season's price on this number was $1.10.

Three lines of serges from the American Woolen Co. have proved excellent sellers: 12 to 12½ oz. in weight, 6/4 width, is quoted this season at $1.12½, last season's price $1.30; 12½ to 13 oz. in weight, 6/4 width, is quoted at $1.20; 11 to 11½ oz., 6/4 width, has been sold this season at 97½ cents, as against $1.07½ of last season. The above three numbers are from the Oswego Mill and were sold up and withdrawn a very few days after the line was opened.

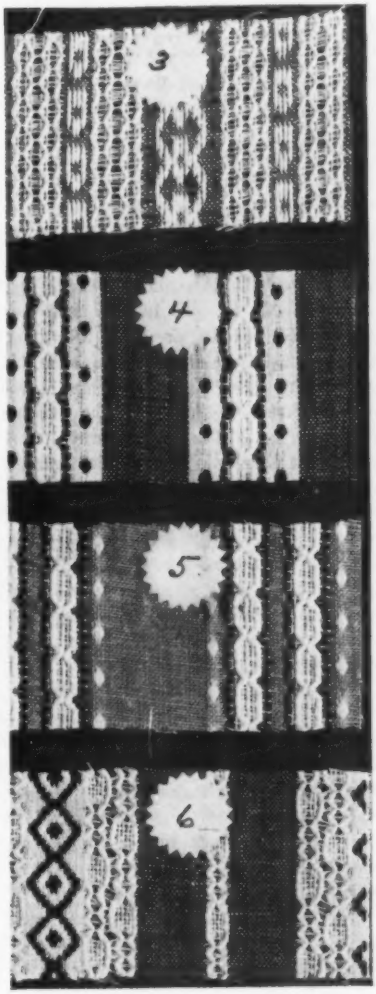
Schlesinger & Co. are showing a very attractive line of 14 oz. all worsted fancies at $1.32½ reg. Fig. B is from a line of worsted stripes, 15 oz. goods, sold by the same firm, and which has been very successful at $1.42½ regular.



COTTON GOODS.

With the exception of the lines of white goods, new styles in wash fabrics for Spring, 1902, are still, in the majority of cases, carefully guarded and have not yet been placed on exhibition. Open work leno and lace effects bid fair to be a strong feature. Nos. 1 and 2 represent two patterns of a cloth of this description, which is

from the new line of Wheelwright, Eldridge & Co. and is known as "tinted leno." At 10½ cents net, this will undoubtedly meet with ready sale. Nos. 3, 4, 5 and 6 illustrate four styles of a woven mercerized effect on a cham-



bray ground, which is something decidedly novel and has already been all sold for Spring delivery at 22½ cents; 28 inches in width. These styles are from the line of Boessneck, Broesel & Co.

The market price on domestic India linens, particularly on the low numbers, is from 7½ to 10 per cent. lower than last season's prices, with a slight upward tendency in evidence.

Textile Conditions in Yorkshire.

Special Correspondence of the Textile World.

To American woolen manufacturers in general the position of affairs in Yorkshire must be written down as flat and unsatisfactory, work not being plentiful, and profits almost nil.

Manufacturers complain bitterly about business conditions and, judging by the price of yarns and the selling price of cloth, how they manage to turn out fabrics at the cost they do is to many a marvel. We had an interview last week with a well-known manufacturer in the Leeds district, who exhibited samples of material, which ten years ago would have commanded at today's price, a thousand piece order at first showing; but at 1s. 7d. (38c.), 55 inches, 21 to 22 ounces, we have a cloth that is a marvel of cheapness. And yet for all that the firm is not busy, though they are as well off for work as most houses.

The Bradford wool trade has continued very quiet, attention being absorbed in the fourth series of London Colonial wool sales, which finished their course last week.

Although merino wool has sold freely at very firm prices, a marked feature of the sales has been the inability of Bradford topmakers to buy largely fine grade wools, London prices being too dear for Bradford. It is estimated that super 60's tops cannot be made under 19d. to 19½d., but such a price today is out of the question, as one can buy a good 60's top, for 18½d., 64's being offered freely at 19d.

Then, too, consumption and demand is very quiet; spinners refuse to believe in any higher prices, and they have the courage of their convictions by refusing to buy tops only to cover their immediate pressing needs, speculation being an unknown quantity.

Forty's crossbred tops have moved

up a cent per pound, and are now selling at 7¾d. for a good article. Just to show the actual condition of affairs, the Yorkshire Woolcombers' preferred ordinary shares are down anywhere from 7s. 6d. to 10s. per £1 share; these sold at one time two years ago at £1 5s. per share. The half-year closed on the 30th of June, but no results of the half-year's business has been announced, and men here fear that for the second time all dividends will have to be passed, debenture interest only being paid. To say the least, the Bradford wool trade is decidedly quiet and the price of tops is not commensurate with what they are costing.

The yarn situation is just about on a par with that for wool, complaints being strong about the want of margins. A manufacturer said to me last week that he could buy yarns today of any quality cheaper than ever he could, and the bottom has been completely knocked out of all previous prices.

Bradford spinners have always done a very good trade with Germany, but never in the history of Worstedopolis has trade fallen to such small dimensions as is the case today, our Continental trade being nearly winked up.

The greatest support is coming from our home trade manufacturers, but even they are very slack with hundreds of looms standing in this district. Some are tempted to make staple lines for stock in order to keep their machinery going, but generally speaking things are extremely quiet, and spinners are ready to make a contract at today's price if they can only secure an order.

Mohair spinners manage to keep their frames busy, and there is evidence of their being able to do so for a good while to come, mohair yarns being in demand for the dress goods trade. The question of price of yarns per lb. will interest United States manufacturers the most, and I here give a few tables of current prices comparing them with those current at the corresponding period a year ago:

PRICES OF COTTON YARN.

Description of Yarn.		Aug. 1901. Cts.	Aug. 1900. Cts.
1/40's	Cotton Egyptian yarn.	.20	.23
2/28's	Alpaca ordinary, per lb.	.33	.35
2/40's	Botany mixtures, per lb.	.60	.67
2/40's	Botany in oil, per lb.	.48	.54
†2/60's	Botany, per lb.	.52	.56
*1/60's	Botany, per gross	$1.22	$1.44
2/40's	Mohair medium, per lb.	.85	.90
2/32's	Mohair ordinary, per lb.	.60	.64
2/32's	Mohair super white, per lb.	.92	.94
2/40's	Worsted, in bundle, per lb.	.29	.35
2/32's	Worsted ordinary, per lb.	.24	.31
1/30's	Demi-color, per gross	$1.72	$1.90
1/30's	Demi-lustre, per gross	1.25	1.50
1/30's	Super lustre, per gross	2.00	2.60

*For super 60's add 6 cents per gross; for common 60's 61 cents per gross less.
†2/48's 4 cents per lb. less.

The piece trade is between hay and grass, being between seasons. In dress goods, mohair lustres still occupy a prominent position, though I hardly think the season has been as good a one as it was last year. However, in the Bradford-American trade lustre dress goods of a plain black character form the principal weight of material that is being shipped to your side: last week I saw patterns of stuff that had been shipped that day, prices ranging as low as 10c. per yard, fabrics of all qualities going up to 24c. These, of course, were very low goods, but they possessed a nice lustre, and seemed to be for sale and not wear.

The dress trade doing between here and the States consists of an highly heterogeneous character and prices vary from 10c. to 72c. per yard. Really speaking, there are few staple lines moving, from common cotton linings up to the best lustre fabrics, including moreens, brilliantines, and the like.

Worsted coatings figure rather low, but I gleaned last week from an official source what are today's lowest prices for clay twills, "French backs," which are being shipped to New York. Today, worsted coatings are selling, but not largely, and Bradford manufacturers would welcome a lowering of the tariff barrier in order to sell their heavy surplus stocks on your side. The following are the particulars:

PRICES OF WORSTED COATINGS.

Width, Inches.	Grade.	Weight. ozs	Price per yd. Jan., 1900. Cts.	Price per yd. Aug., 1901. Cts.
55	56's quality	12	60	54
55	"	14	66	57
55	"	16	72	63
55	"	18	78	68
55	"	20	86	74
55	"	22	92	80

The Mill Operative in Japan.

During his recent visit to Japan, M. Andre Seidfried studied the conditions in Japanese cotton mills, and reported upon his return to France that the Japanese operative is under very slack discipline. He works only when it suits him, takes his leave without notice and in fact, comes and goes as he chooses. If he is reproved, he leaves, and is a veritable independent.

The wages in Japanese cotton mills are very low, so low that in the mills of Tokio and Osaka a man earns but twenty cents a day. Young girls work twelve hours out of the twenty-four for eight to ten cents per day. They are housed by the mill company at a charge of three to three and one-half cents per day. As many as twenty girls occupy one room, and sleep on matting on the floor.

Living expenses are low, but nothing in proportion to the low level of wages. The socialistic spirit has gained a footing among the Japanese operatives, and the mill owners have to contend with the same problems that confront the manufacturers of Europe.

—The Wool Growers' Association are having a bill drawn up for presentation at the coming session of Congress, which is to require that clothing shall be plainly marked with the percentages of cotton, wool and shoddy which it contains. The framer of the bill, according to recent advices, was struggling with the problem as to how the law could be framed to require second-hand clothes to be labeled after the purchaser had discarded them.

The Manufacture of Lace Curtains.

As there are at the present time quite a number of lace curtain mills in the United States, it may be of interest to the readers of the Textile World to have some of the difficulties arising in this industry pointed out, together with their causes and remedies.

On the lace curtain machine there are a great many broken threads caused by carriages being badly sprung. If set too tight they cause many stoppages besides the trouble that the tight thread will cause; in most cases such a thread will give out in the bleaching and the bleacher is blamed for it.

Pin holes are caused by poor bobbin and carriage tenders, and also by the points not being in order. Places where the points rubbed very hard, although not breaking the thread, will cause a defect that develops when the goods come to the bleachery. It is the practice in Nottingham, when such troubles arise in the weave, for the overseer to examine the machine with a good magnifying glass in order to locate the exact cause of the trouble. In America, however, too much of the repair work is placed on the foreman, and consequently, he does not have time to inspect his machine. It will be found more economical to give the overseer necessary assistance than to have the curtains spoiled.

The selvages cause a great deal of trouble, as the goods are made in single divisions and finished on the tenter machine. If a pattern comes out damaged on the selvages it is a good plan to try one with a draw thread, that is, make it full width. Sometimes it is impossible to put in a draw thread, in that case, let the piece be cut down and it will be found that the cost of cutting or drawing will pay for itself.

Much damage is caused by poor work in the sewing room. If the sewing is not properly done, the badly finished threads come out in the bleaching process. Not only should the sewers themselves be experienced,

but they should be under the charge of an overseer who is constantly supervising their work.

After the goods are sewed the quicker they get to the bleachery the better. If goods are not wanted they should not be mended as there is danger of damage every time they are moved. In some mills the goods are run from the mending room to the kier through pot eyes. It is necessary to have some kind of arrangement, such as rollers to carry the goods, and it often happens that one side of the piece will get ahead of the other, or one side may hang down; in such a case the strain comes all on one part of the goods, and will cause damage.

The boys in the kier should wear rubber shoes, and should not be allowed to go barefooted, or to wear leather shoes, as in either case the lace curtains are liable to be damaged by the feet. LACE.

Memoirs of a Veteran Wool Carder.

IV.

I next went to work as carder in the Brierly Felt Mills, Milton Mills, N. H., and stayed there nine months. The owner, Mr. Brierly, was an Englishman, a large man and a dyer by trade; he was very active, and could often be seen with his shirt sleeves rolled up to his shoulders working away with might and main in the dyehouse. He was not afraid of soiling his hands.

I next engaged with Arthur Fieldhouse, agent for Rawitser & Bro., Mystic, Conn. He had recently taken this position of agent and was starting the mill on mungo goods; the stock was on the cards, but they could not get the drawing through the Apperley feeds. After I had straightened out this difficulty they gave me charge of the South Coventry Mill, belonging to the same company, and which was in same trouble as the Mystic mill.

When I reached South Coventry the mill was shut down on account of the difficulty in the card room. I went to work in the morning, and at noontime the help came in, and the mungo went all right. This was a temporary position, and while here I changed over six first breaker shoddy cards into two sample sets with condensers.

In 1878 I engaged with Richard Waterhouse, superintendent of No. 1 mill, Blackstone Woolen Co., Waterford, R. I., where there were 24 sets of cards; in those days this was about the hardest card room to tackle in the country; the help were all of one nationality; the carder had been brought up among them and it was by no means an easy berth for a new comer.

I managed it at the start in this way. I walked around the room for two or three days taking notes and carefully observing the various dispositions among the help under me. I found that some of the card strippers had worked in the mill stripping cards for over twenty years, and even then did not know how to put the stripper belt on the card when it broke. They took no interest in anything except cleaning cards.

I spoke very little to the help at first about their work; after a few days I had the worst ones marked out, and let them go one by one. When I told them their services were not wanted, they looked at me with astonishment and asked why. The only reply that I gave them was that they knew why. I afterwards took them back and for the three years that I remained there I never had better help.

It has been my rule to give those under me all the assistance I could in advancing themselves; there are many boss carders today who would have still been stripping cards if it had not been for the opportunity which I gave them to learn how to do something better.

I have always made the practice to set the cards myself and weigh the roping. At the Blackstone Mill I found the rings all hooked and the roping from every card was twitty. It was a tedious job to get the rings on 24 sets in good order. I clothed the hand cards with No. 32 new fancy

wire, and set four men to work giving the doffers one hour's smoothing. It was not very long after this that the cards were in good shape.

The superintendent was a hustler. He spent most of his time in the mill, weighed out every lot himself and, consequently, knew just what was in them. Sometimes he would get the stock too low; as soon as he found it out, he would send the batch back to have some better material added. This is a strong contrast with the practice of many superintendents, who insist upon having the batch carded and spun as it was originally mixed no matter how long it lasts, how much waste it makes or what poor work it causes.

There were no self feeds on these 24 sets and it required 24 hands to feed the breakers. After we put the Bramwell feeds on, one man carried the stock and another tended the feeds. I shall never forget the trouble we had with the hand feeds; the help would frequently let the stock run out, seldom weighing it right and sometimes dumping it on without weighing.

In those days the smallest help or any green hands were good enough for the card room. This is not the case at present when card room help are old and more skilled in their work, and get more pay than formerly. Owing to the great improvements in machinery, a much less number of hands is required. While at Blackstone I introduced the Apperley feeds for the second time. The Apperleys had been on the cards before, but not being successful, had been taken off and the old creels and spoolers put back. I succeeded in getting the card room equipped and running well with the Apperley feeds.

SAM. DRIVER.

(To be continued.)

—There is no more necessary or beneficial law than that of labor; and yet all of our desires and efforts are directed toward freeing ourselves from it.—Anon.

The Process of Drying.

From the advance sheets of the new treatise on drying, published by the B. F. Sturtevant Co.

FIRST PRINCIPLES.

A substance becomes dry by the evaporation of its inherent moisture into the surrounding space. If this space be confined it soon becomes saturated and the process stops. Hence, constant change is necessary in order that the moisture given off may be continually carried away.

In practice, air movement is therefore absolutely essential to the process of drying. Heat is merely a useful accessory which serves to decrease the time of drying by increasing both the rate of evaporation and the absorbing power of the surrounding space.

It makes no difference whether this space is a vacuum or filled with air; under either condition it will take up a stated weight of vapor. From this it appears that the vapor molecules find sufficient space between the molecules of air. But the converse is not true for somewhat less air will be contained in a given space saturated with vapor than in one devoid of moisture. In other words the air does not seem to find sufficient space between the molecules of vapor.

If the temperature of the space be increased, opportunity will thereby be provided for the vaporization of more water, but if it be decreased its capacity for moisture will be reduced, and visible water will be deposited. The temperature at which this takes place is known as the "dew-point" and depends upon the initial degree of saturation of the given space; the less the relative saturation the lower the dew-point.

ATMOSPHERE AS A DRYING MEDIUM.

Although the vacuum system of drying has been tried upon a small scale, it is evidently impracticable for commercial purposes, and in fact does not under any conditions possess advantages sufficient to warrant its use.

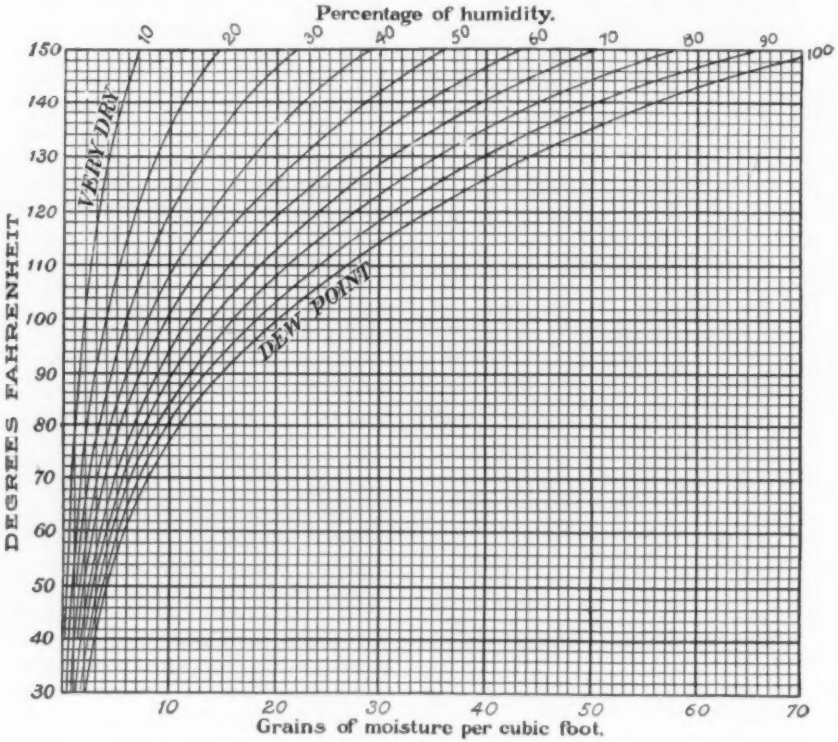
The surrounding atmosphere is

therefore universally recognized as the best medium for the absorption and removal of moisture. Its capacity for absorption,—or more properly speaking, the amount of vapor which a given space will contain,—increases rapidly with the temperature. It is principally for this reason that heat is such a valuable accessory to the drying process.

The degree of saturation, or the humidity, is usually expressed relatively in per cent. of the total amount of moisture which the air would be capable of taking up at a given temperature. The air is saturated when it is incapable of taking up and holding invisible any additional amount of vapor. In other words the actual temperature of the mixture and the dew-point coincide, and the least cooling would cause deposition of moisture. Saturated mixtures of air and vapor are seldom to be found either in nature or in connection with a properly operated drying system.

The relations of temperature and moisture for different degrees of humidity are clearly shown by the accompanying hygrometric chart. The curves, of which there are ten, correspond to the percentage of humidity from 10 to 100. The dew-point for any given temperature is manifestly that at which the relative humidity is 100 per cent.—that is to say when the air is saturated.

The reports of the United States Weather Bureau for 1899 show that the mean annual temperature of the 20 districts, into which the United States is divided, was 54° and the mean humidity slightly above 70 per cent. These may properly be taken as fair basis values for drying calculations.



HYGROMETRIC CHART.

DRYING CAPACITY OF THE ATMOSPHERE.

The weights of air, vapor and saturated mixtures at different temperatures are displayed in the preceding table from which it appears, for in-

stance, that while one cubic foot of a saturated mixture of air and vapor will hold only .000627 pounds of moisture, the capacity of a cubic foot at similar mixture at 142° weighs only .0524 pounds, which quantity has, however, capacity for the absorption of .008473 pounds of vapor. Hence, the

WEIGHTS

OF AIR, VAPOR OF WATER, AND SATURATED MIXTURES OF AIR AND VAPOR AT DIFFERENT TEMPERATURES, UNDER THE ORDINARY ATMOSPHERIC PRESSURE OF 29.921 INCHES OF MERCURY.

Temperature. Fahrenheit.	Volume of Dry Air at different temperatures, the volume at 32° being 1.000.	Weight of a Cubic Foot of Dry Air at different temperatures, in pounds.	Elastic Force of Vapor in inches of Mercury, Regnault.	MIXTURES OF AIR SATURATED WITH VAPOR.						
				Elastic Force of the Air in the Mixture of Air and Vapor in ins. of Mercury.	WEIGHT OF CUBIC FOOT OF THE MIXTURE OF AIR AND VAPOR.			Weight of Vapor mixed with 1 pound of Air in pounds.	Weight of Dry Air mixed with 1 lb. of Vapor in pounds.	Cubic Ft. of Vapor from 1 lb. of Water at its own pressure in column 4.
					Weight of the Air in pounds.	Weight of the Vapor in pounds	Total Weight of Mixture in pounds			
1	2	3	4	5	6	7	8	9	10	11
0°	.935	.0864	.044	29.877	.0863	.000079	.086379	.00092	1092.4	
12	.960	.0842	.074	29.849	.0840	.000130	.084130	.00155	646.1	
22	.980	.0824	.118	29.803	.0821	.000202	.082302	.00245	406.4	
32	1.000	.0807	.181	29.740	.0802	.000304	.080504	.00379	263.81	3289
42	1.020	.0791	.267	29.654	.0784	.000440	.078840	.00561	178.18	2252
52	1.041	.0776	.388	29.533	.0766	.000627	.077227	.00819	122.17	1595
62	1.061	.0761	.556	29.365	.0747	.000881	.075581	.01179	84.79	1135
72	1.082	.0747	.785	29.136	.0727	.001221	.073921	.01680	59.54	819
82	1.102	.0733	1.092	28.829	.0706	.001667	.072267	.02361	42.35	600
92	1.122	.0720	1.501	28.420	.0684	.002250	.070717	.03289	30.40	444
102	1.143	.0707	2.036	27.885	.0659	.002997	.068897	.04547	21.98	334
112	1.163	.0694	2.731	27.190	.0631	.003946	.067046	.06253	15 99	253
122	1.184	.0682	3.621	26.300	.0599	.005142	.065042	.08584	11.65	194
132	1.204	.0671	4.752	25.169	.0564	.006639	.063039	.11771	8.49	151
142	1.224	.0660	6.165	23.756	.0524	.008473	.060873	.16170	6.18	118
152	1.245	.0649	7.930	21.991	.0477	.010716	.058416	.22465	4.45	93.3
162	1.265	.0638	10.099	19.822	.0423	.013415	.055715	.31713	3.15	74.5
172	1.285	.0628	12.758	17.163	.0360	.016682	.052682	.46338	2.16	59.2
182	1.306	.0618	15.960	13.961	.0288	.020536	.049336	.71300	1.402	48.6
192	1.326	.0609	19.828	10.093	.0205	.025142	.045642	1.22643	.815	39.8
202	1.347	.0600	24.450	5.471	.0109	.030545	.041445	2.80239	.357	32.7
212	1.367	.0591	29.921	0.000	.0000	.036820	.036820	Infinite.	.000	27.1

142° is .008473 pounds or over thirteen times as much.

But this is not all. The air in one cubic foot of saturated mixture at 52° weighs .0766 pounds while that in a .0766 pounds of air present in the initial cubic foot at 52°, will, when heated to 142°, have capacity for $.0766 \div .0524 \times .008473 = .0124$ pounds or nearly twenty times as much as at 52°.

The cause of the rapacious avidity with which heated air takes up moisture is thus made evident.

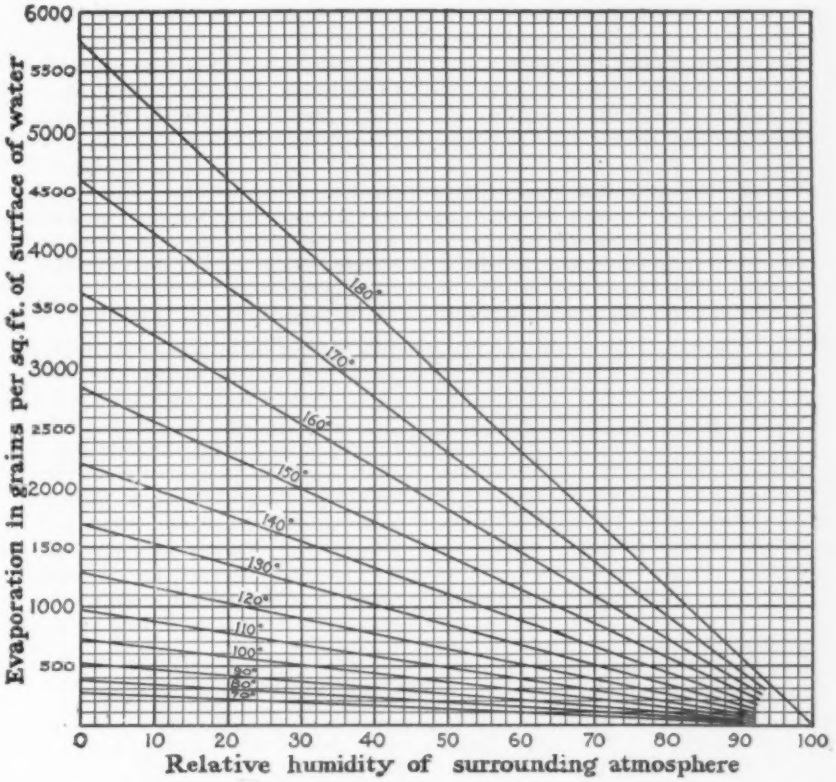
Upon this basis the succeeding table has been calculated to show the influence of temperature upon the vapor capacity of air. From this it appears, for instance, that the amount of moisture which serves to saturate one cubic foot at 72° is only sufficient to give it a relative humidity of 10 per cent. at a temperature of 152°.

INFLUENCE OF TEMPERATURE UPON VAPOR CAPACITY OF AIR.

Temperature Fahrenheit.	Wt. of 1 cu. ft. of Dry Air in Pounds.	Relative Volume of Initial Wt.	Vapor Capacity in Pounds of Initial cu. ft. of Dry Air at 52° when expanded by given Temperature and by Humidity. Relative Humidity in Per Cent.									
			10	20	30	40	50	60	70	80	90	100
52°	.0776	1.	.00006	.00012	.00019	.00025	.00032	.00038	.00044	.00051	.00057	.00064
62°	.0761	1.02	.00009	.00018	.00027	.00036	.00045	.00055	.00064	.00073	.00082	.00092
72°	.0747	1.04	.00013	.00025	.00038	.00051	.00064	.00077	.00090	.00104	.00117	.00130
82°	.0733	1.06	.00018	.00036	.00054	.00072	.00090	.00108	.00126	.00145	.00164	.00183
92°	.0720	1.08	.00024	.00049	.00077	.00099	.00124	.00150	.00175	.00201	.00228	.00254
102°	.0707	1.10	.00033	.00065	.00101	.00135	.00170	.00245	.00248	.00277	.00314	.00353
112°	.0694	1.12	.00045	.00090	.00136	.00183	.00231	.00280	.00329	.00381	.00433	.00485
122°	.0682	1.14	.00059	.00119	.00182	.00246	.00311	.00378	.00447	.00519	.00590	.00666
132°	.0671	1.16	.00078	.00158	.00242	.00328	.00417	.00510	.00605	.00705	.00806	.00913
142°	.0660	1.18	.00102	.00208	.00318	.00432	.00555	.00684	.00812	.00952	.01098	.0124
152°	.0649	1.20	.00131	.00270	.00417	.00572	.00734	.00912	.0110	.0130	.0156	.01743
162°	.0638	1.22	.00169	.00350	.00545	.00753	.00983	.0126	.0149	.0179	.0201	.0246
172°	.0628	1.24	.00216	.00452	.00708	.00995	.0130	.0166	.0206	.0250	.0300	.0360
182°	.0618	1.26	.00272	.00578	.00920	.0131	.0175	.0227	.0288	.0360	.0446	.0553

In fact the initial quantity of moisture in air of moderate temperature and humidity may usually be neglected in calculation, and the full vapor capacity at given temperature be taken as given in the table. The drying value of any given quantity of air is naturally measured by the difference between the amount of moisture held in suspension at normal temperature, and that carried away at the temperature of exit. This amount should, for

satisfactory working be less than that required for saturation, usually ranging from 70 to 90 per cent. The actual cost of drying by steam is very properly measured by the number of pounds of steam required to evaporate one pound of water from the substance.



SHOWING EFFECT OF TEMPERATURE ON EVAPORATION.

EFFECT OF AIR MOVEMENT.

The effect of temperature upon the rate of evaporation from the surface of water into still air of different degrees or humidity, is exemplified in the succeeding chart, which is based upon the results of experiments. The rate at which water can be evaporated from a given substance will in addition depend upon its character, its degree of dryness, its mass and the manner in which it is presented to the air, but principally upon the rapidity with which the air is changed and fresh volumes supplied.

The more frequent this change the more rapid is the rate of drying. This is emphatically proven by experiments with water in an open vessel successively exposed in calm air, a fresh breeze, a strong wind and a gale. The ratios of evaporation were respectively: 1, 4.4, 8.8, and 12.4.

Frequent air movement at moderate temperature is often equivalent to more rapid change at higher temperature, and may serve to reduce the total heat loss in the discharged air. Each substance, however, requires its own peculiar treatment which must usually be varied as the drying progresses.

HEAT LOSSES IN THE DRYING PROCESS.

In apartment drying where the material remains in the same position

during the entire process, variation in treatment is secured by changing either the air volume or the temperature. The discharge temperature is then practically the same as that throughout the room.

In the progressive plan, however, the air supply and temperature remain practically constant while the material, continually progresses from the cooler and relatively moister portion of the room to that which is hottest and dryest. Under the conditions presented by either system there is a three-fold loss of the heat originally imparted to the air.

First; that required to evaporate the moisture in the stock. Second; that lost by transmission through walls and by leakage to the outer atmosphere, and third; that carried away in the air intentionally discharged from the room.

The first, which measures the actual cost of drying only, is evidently an inherent part of the process and therefore cannot be reduced; the second, which is usually great, depends upon the character of construction, and in most cases could and should be materially reduced; the third loss is to a certain extent inherent, but may be kept at the minimum by maintaining the proper relations between air volume and temperature and the space occupied as a drying room, so that the utmost available drying capacity shall be utilized.

The conditions are very clearly shown by the following results of a careful test of a special form of drying tower for removing the moisture from heavy card board. It was well built, heated air was supplied under pressure by a Sturtevant Steam Hot Blast Apparatus, and a portion of the air was returned through a galvanized iron duct and reheated in connection with a moderate supply of fresh air admitted from the atmosphere.

A portion of the heat was saved by using the return duct, as is possible under proper conditions, thereby cooling and condensing some of the moisture out of the air and then passing it to the heater at a temperature considerably higher than that of the atmosphere. Had all of the air been discharged from the top of the tower, this loss would have been greater and the efficiency lower, but the higher the tower the better the opportunity of cooling the air to the lowest practicable temperature.

It is easily possible, particularly in a progressive dry room, to make the mistake of having the length of transit of the air over the material so great that the air, although saturated to only 70 or 80 per cent. humidity at a relatively high temperature in the warmer portion of the room, becomes cooled below the dewpoint before exit, and actually deposits moisture upon the material which is to be dried. Large volumes of air and shorter length of transit will overcome the difficulty.

VOLUME OF AIR REQUIRED FOR DRYING.

In the test just referred to 2,200 cubic feet of air at a temperature of 202° was supplied for each pound of water evaporated from the stock—thus showing the absolute necessity of air movement as well as high temperature. The evaporation of water per

LOSSES OF HEAT IN DRYING SYSTEM.

Source of Loss.	Per cent of Total Heat.
Required to vaporize moisture in stock	32
Lost by leakage, radiation from tower and unaccounted for	37
Lost by radiation from return duct and by introduction of fresh air at fan room	31
Total heat imparted to air	100

hour per square foot of exposed surface of the stock was .0553 pounds and the amount evaporated per pound of steam supplied to the heater was .263 pounds.

In the drying of green lumber fresh from the water the air supply per pound of water evaporated frequently ranges between 2,000 and 5,000 cubic feet. A great deal depends upon the manner of exposure to the air, i. e., to the method of piling in the case of lumber. The enormous volume of air actually required for the mechanical process of taking up and carrying away the water is the best evidence of the necessity of positive and ample air movement.

Commercial success in drying therefore requires that the substance be exposed to the air in the most efficient manner; that the temperature of the air be as high as the substance will stand without injury and that the air change or movement be as rapid as is consistent with economical installation and operation.

Under the mistaken idea that heat is the only essential to the drying process, dry rooms are only too frequently built with ample heating surface but with practically no opportunity for air circulation. Only because of natural leakage of air do they avoid dismal failure. Even where provision is made for circulation of air it is often the case that dependence is placed solely upon the effect of the heat to produce air movement. Such movement is sluggish at best and frequently uncertain. High stacks tend to improve the circulation but in so far as the heat required to operate them might be otherwise usefully employed they are expensive as compared with mechanical means.

The fan blower is positive in action, economical in operation and its speed may be regulated to the exact requirements. Instead of spreading out the steam pipe within or beneath the dry room and thus introducing an element of constant danger from fire, it may, with the fan, be massed in small space outside the dry room, enclosed in a fire proof casing and the air forced or drawn through it by means of the fan. The high velocity of the air passing across the pipes vastly increases their efficiency, so that one foot thus exposed becomes equivalent to from three to five feet placed in the dry room in the ordinary manner.

It is desirable that the fan be driven by a special engine, usually direct-connected to the shaft. Its operation costs practically nothing, for the exhaust steam is utilized in the heater.

Compared with a stack or chimney for producing air movement the fan thus becomes so much superior that, based upon efficiency there can be but one choice. The relative efficiency of a fan and a stack or chimney, under ordinary working atmospheric conditions is shown in the following table. Even at ordinary speed a fan produces a pressure difference so much in excess of that created by a heated stack that far larger volumes may be moved at increased velocity. Even with internal air as high as 200° and outdoor air at 50° a stack would have to be nearly 600 feet high to produce the same pressure as is created by a fan at ordinary speed.

RELATIVE EFFICIENCY OF A FAN BLOWER AND A STACK DISCHARGING AIR FROM THE TOP. OUTSIDE TEMPERATURE 60° F.

Height of Stack in Feet.	Number of Times Fan is more Efficient than Stack.	
	Where Fan Engine Exhaust is Wasted.	Where Fan Engine Exhaust is Utilized.
30	20	350
40	15	260
50	12	210
60	10	175

The importance of ample air circulation has already been emphasized. With the stack it is evident, as already shown, that this can only be secured by actual waste of heat to the atmosphere, for it is the temperature of the escaping air that governs the velocity. Hence there is a two-fold increase in the waste; the air is both greater in volume and also higher in temperature. With the fan on the other hand additional air volume costs practically nothing, for all the steam required to operate the fan engine is utilized in the heater and to this extent reduces the amount necessary to be supplied from any other source. The temperature of escaping air from the room may still be maintained as before.

The advantages claimed for the blower or hot blast system lie in the ability to regulate the drying process to a nicety but also to force it to the limit, when the conditions will permit. The time of drying and the space required are thus reduced to the minimum. This is of particular advantage where material like lumber is to be only partially dried in order to reduce shipping charges. The process is entirely independent of the condition of the weather. What previously required weeks and months with the old system of stacking is now accomplished in hours and days.

All of the heating surface is placed outside the kiln and enclosed in a steel plate casing, thus absolutely avoiding all danger of fire.

The Manufacture of Shawls in India.

So late as half a century ago the manufacture of shawls still formed one of the principal artistic industries in India, but it has now become almost extinct. It had its origin in Kashmir, apparently in the remotest ages.

Under the Mogols the industry grew in extent and magnitude and acquired an unparalleled vogue. This was the period when Kashmir shawls were greatly esteemed by the nobility in India. Every well-to-do family used to keep a pair or two of these costly shawls at home to be worn by the head of the family on religious and festive ceremonies and on the occasions of paying visits to the King and State Officials.

These shawls were the mark of social status and distinction, and formed, therefore, one of the chief household valuables, and were bequeathed from generation to generation. Every member of the family used to value them as a hereditary gift and took a noble pride in having possession of a number of them and in trying to add to the number by fresh purchases.

But a great change has taken place. Instead of those happy crowded villages, we find forlorn desolate-looking collection of huts, and in place of the merry smiling family groups, we come across a few miserable people struggling for existence.

Whole villages have been abandoned, and the inhabitants have gone abroad in search of livelihood. They would be thankful if they could get employment as laborers, earning three or four pence a day. Sometimes these wretched people are found collecting firewood from the jungle or quarrying stone in the hills.

The process of manufacture followed by the Kashmiris is rough and simple compared with the European way of manufacturing shawls. The downy wool of the Thibetan goats supplies the raw material of this industry. This soft wool is beaten, thoroughly cleansed and washed, and spun into yarn by hand spinning wheels. The yarn is then woven into a wonderfully fine texture and then the colored woolen border, etc., is interwoven.

These people, with all their rustic, simple appliances, vie with those aided by all the resources of Western science and art. The workmanship is marvelously fine, rich, and harmonious. The dyes used are all natural and permanent. In order to secure the permanency of the dyes, the shawls are washed in special lakes or streams, the water of which is believed to have the peculiar property of making colors fast.—K. K. Mukerji, Rai Sahib, in Jour. Soc. Arts.

Lace Makers of Calais.

A correspondent of the L'Industrie Textile, writing to that journal, gives some very interesting information in regard to the lace workers at Calais. While the writer shows that his sympathies are strongly with the employer, he makes many statements in regard to the wages and the hours of labor that will be interesting to readers in this country where attempts are now being made to establish this industry. The United States is one of the largest purchasers of the products of the European lace industry, our imports of cotton laces alone in the year ending June 30th, 1900, amounting to $19,208,167.

The French writer claims that the lace worker is an aristocrat among the working people, that their wages are high, their work easy, and that the conditions of the industry enable them to advance rapidly from the position of worker to that of an employer of labor. The writer states that most of the work is paid by the piece, the lace maker being paid according to the number of movements of the machine. These movements are figured on what is called the rack measure, which corresponds to 1920 motions. The price list was fixed in 1890, and is still in force. It varies with the set or fineness of the material, and the price varies from 13½ to 35 cents per rack.

A worker can "do" a rack in from 20 to 25 minutes, and in the busy season, when he is working full time, his wages vary from $9.50 to $19.00 per week, according to his skill. Some are able to earn even more than the last named sum. A man has been known to make as high as $25.00 per week, but the weekly average will not be much over $13.50.

The hands work in shifts of from 5 to 6 hours, each hand working in two shifts per day. In this way, the machines are running day and night, and a hand works from 11 to 12 hours out of the 24.

During the dull season, which lasts from May until October, wages are somewhat less. Besides the actual making of the goods on the lace machine there are other departments in some of which very high wages are earned; take for instance, the work of placing a design on cards, where from $9.50 to $23.00 per week can be earned. For some of the higher grades of this work, as high as $2000 per year is paid. The design is then transferred to design paper ruled in sections, and the worker here earns from $4.00 to $8.00 per week. The card cutter earns about $9.50, warpers $6.00, bobbin winders $3.00, doublers $5.00, lace menders $4.00, and sample cutters $4.00 per week. There are cases where whole families work in the lace works, and their combined wages sometimes amount to as much as $230.00 per month.

—A compound for removing rust from and brightening the appearance of soiled fabrics has recently been patented in this country. Ten parts of oxalic acid and two parts of borax are thoroughly pulverized and mixed together. This compound is spread upon the cloth to be treated and enough boiling water applied to dissolve the acid and borax. It is claimed that the rust will be entirely removed and the cloth or fabric perfectly cleansed, and that the compound may be used with equally good results for bleaching.

—A patent has been issued in Germany for softening hard felted goods by running them during the fulling process through an apparatus which causes an electric current to pass through the goods.

Foreign Opinion as to the Round Cotton Bale.

Probably 90 per cent. of the cotton put up in round cotton bales is consumed by foreign mills; practically all of this 90 per cent. goes to continental mills, and for this reason a better judgment of the merits of the round bale can be formed by foreign

spinners than by those at home. The Oesterreichische Wollen und Leinen Industrie has recently published opinions on this question from a large number of spinners who have used the round bale of cotton in their mills. The first reference to the subject consisted of a letter from a cotton mill manager in Skalitz as follows:—

"The economy as regards freight and space occupied by the round bales can be considered as an advantage to the spinner since it will tend to reduce the price of cotton. This advantage, however, is not yet a matter of record, since cotton dealers avoid, intentionally it appears, giving the spinner prices on both round and square bales. The difference in freight from Hamburg or Bremen is of trifling amount.

On the other hand the handling of cotton in Bremen, costs more for round than for square bales. The cost of handling 200 square bales (44,134 kg.) in Bremen is as follows:

Receiving and Weighing	70 Marks
Arbitrage	36 Marks
Hoisting	37.60 Marks
Tax	26.50 Marks
Stamps and Certificate	6.80 Marks
	176.90 Marks

This is equal to 4⅘ cents per 100 lbs.

The cost for handling 902 round bales (105,242½ kg.) in Bremen is as follows:—

Receiving and Weighing	315.70 Marks
Arbitrage	162.40 Marks
Hoisting	89.50 Marks
Tax	63.20 Marks
Stamps and Certificate	15.20 Marks
	646. Marks

This is equal to 6 7/10 cents per 100 lbs., and shows that it costs 50 per cent. more to handle cotton in Bremen in round bales than when baled in the old style. Although the tare on round bales is much less than on square bales, yet here again the spinner finds the square bale more profitable. The tare allowed on square bales is 6 per cent., and on round bales 1 per cent. I take the following figures of actual tare from my mixing book:—

	Square.	Round.
Bales	756	10.
Gross Weight	167,647 kg.	1261.5 kg.
Hoop Iron	2,069 kg.	
Bagging	5,714 kg.	
Total tare	7,783 kg.	11.17 kg.
Net weight	159,864 kg.	1250.33 kg.

Tare, square bale 4.64 lbs. per 100, round bale .885 lbs. per 100.

On the square bale there was a tare of 6 lbs. per 100 allowed; deducting the actual tare 4.64 gives 1.36 lbs. per 100 as the gain on tare allowed. 1 per cent. tare was allowed on the round bales; deducting the actual tare .885, we have .115 lbs. as the gain on tare. This shows a difference to the spinner of 1.245 lbs. per 100 in favor of the square bale.

The wrapper from the round bale is usually in good order and can be used for packing yarn or other goods. Allowing for its value one-half the cost of new jute packing, we have 30 Kr. as the value of this material per bale. The packing from the square bales is usually fit for nothing but paper stock. This material and the hoop iron will sell for about 27½ Kr. per bale, or about the same as the value placed on the packing from the round bale.

As to the advantage of the round bale as regards manipulation in the mill it may be stated that the round bale would be perfect if it fulfilled all of the claims made for it by the American Cotton Co. Unfortunately this is not the case, and I have good reasons for complaining about the round bales, of which I have used about 1000. In the circulars of the round bale company it is claimed that the lap of the round bale is so regulated that each square yard weighs 3 lbs. I have made accurate records on this point in more than 100 cases. The following table gives the weights per yard 35 inches wide in different parts of the same bale:—

Further records of this bale could not be made as the lap would not separate from the roll. This shows that the nearest approach to the 3 lbs. claimed by the round bale company was 2.778 lbs., while the variations were between this and 1.783. Upon the whole, however, this result must be considered fairly uniform, considering that it is the first process in the manipulation of the fibre.

thick mm.	Gramm	Lbs.	thick mm	Gramm	Lbs.
11.5.7	**1180**	2,491	5.4.7	1040	2,293
10.3.8	1058	2,321	8.4.7	1000	2,205
7.9.6	985	2,171	10.7.5	1120	2,469
11.7.8	990	2,182	8.4.4	1100	2,425
7.11.6	1240	2,734	8.5.6	1250	2,756
7 6.3	890	1,962	10.7.8	1230	2,712
9.4.2	995	2,193	6.2.4	1200	2,646
9.5.7	960	2,116	4.2.4	980	2,160
8.9.3	995	2,193	4.5.5	1240	2,734
$1^1/_2$.5.3	940	2,072	4.3.6	1045	2,304
6.5.$2^1/_2$	940	2,072	8.7.5	1250	2,756
$1^1/_2$.6.7	900	1,984	6.10.3	1175	2,590
6.4.5	1110	2,497	6.5.3	**1260**	**2,778**
5.7.7	990	2,182	2.5.6	1180	2,601
10.6.3	1090	2,403	8.7.1	1200	2,646
3.6.1	1020	2,244	3.6.6	1220	2,690
5.7.3	1120	2,469	3.4.2	1180	2,601
10.3.8	920	2,028	6.2.4	1115	2,458
5.4.10	930	2,050	3.5.7	1250	2,756
4.5.4	1010	2,227	10.2.6	1109	2,445
2.4.3	1013	2,228	3.8.3	**809**	**1,783**
6.4.2	960	2,116	5.2.$1^1/_2$	1190	2,623
6.5.9	1150	2,535	4•2.2	1060	2,337
5 5.1	1030	2,271	2.3 1	930	2,050

In feeding the cotton from the bale to the breaker, I place three bales in front of the machine and carry the laps to the apron over three iron rollers (9 inches in diam.), placed one behind the other and driven by power. With this device, and when the bales unwind well it takes about thirty minutes to run the three bales (660 to 792 lbs.) through the breaker. Allowing a time loss of 25 per cent. this would be equal to a production of 13,068 lbs., equal to 28 square bales per day of 11 hours. It requires from 18 to 20 minutes to run a square bale (462 lbs.) of cotton through the breaker; this is equal to 25-26 bales per day, or about the same as with the round bales.

This result with the round bale is, however, only possible when the roll unwinds readily, and unfortunately, this is the case with but a small proportion of the bales. Generally, the first half of the bale unwinds readily and then the lap begins to stick and become torn and ragged; when about two-thirds of the bale is unwound it becomes necessary to tear the cotton up with hand hooks, and the feeding of the last third of the bales consumes more time than that of three bales which unwind readily. This trouble is so frequent that the unwinding of the round bale may be considered the exception instead of the rule.

The thick parts of the lap which are not pressed so hard, unwind more readily than the thin parts. Another trouble arising from too hard pressing is that the cotton lap forms a sort of felt as if it had been pressed when in a wet state, and resembles pasteboard or leather. It is very difficult to open up cotton in this condition, and it frequently happens that the knives and beaters of the openers do not thoroughly open up these places and the cotton in such cases reaches the cards in very poor condition. I have frequently found it necessary, when such hard laps come from the bales, to take out all the wings of the beater and substitute a new set with sharp edges in order to open up the stock.

This difficulty must be remedied before the spinner can be benefited

by the round bales, whose advantages are unquestioned when the lap unwinds easily. Until this evil is corrected the proposition, made in the round bale circulars, to use the round bale and thus dispense with the bale breaker and first beater, will remain a riddle to me.

In spite of assertions on the part of the round bale people to the contrary the quality of the cotton in round bales is lower. A large amount of foreign matter is present in the material, such as oil, leaves, sand, etc. Again in spite of claims to the contrary, I find it impossible to sample the cotton as readily in the round bale as in the square form. To be sure the outside of the bale can be readily sampled, but it is impossible to sample either the middle or beginning of the roll.

In conclusion it must be stated that the percentage of moisture is greater in cotton from round bales. As is well known the percentage of moisture in raw cotton, which the trade assumes as normal is as follows:—

Commercial weight=dry weight+ 8½ per cent. thus;

108½ lbs. com. weight=100 lbs. dry+ 8½ lbs. or

100 lbs. com. weight=92.17 lbs. dry+ 7.83 lbs.

During the past thirty years I have made many tests of the moisture in American cotton, and have found it to vary from 7.76 to 8.4 per cent. My tests of the moisture are round bale cotton indicate a much higher amount, ranging from 10½ to 11 per cent. As my figures may be open to doubt because they are unofficial, I have had many tests of round bale cotton made in the Wollen und Seiden Austalt in Wien, and I give the following two official statements of such tests:—

(a) Cotton in round bales; Sig. P. J. A. S. Quality; American.

As received in Wien ....692 4/10 kg.
After drying .....627 2/10 kg.
Loss ..... 65 2/10 kg.

This corresponds to the following:—110.39 = 100 + 10.39; it should be 108.5=100+8.5; or an excess of moisture in the round bale cotton amounting to 1 9/10 per cent.

(b) Cotton in round bales; Sig. S. A. D. B.

As received in Wien ....774 9/10 kg.
After dyeing .....694 4/10 kg.
Loss ..... 80 5/10 kg.

This corresponds to the following: 111.59=100+11.59; it should be 108.5= 100+8.5; or an excess of moisture in the round bales of about 3 per cent.

Thus it appears that the round bale cotton contains from 1 9/10 per cent. to 3 per cent. more moisture than that in square bales. This 2 per cent. or 3 per cent. excess of moisture means from 2 per cent. to 3 per cent. less yarn for the spinner.

We must therefore conclude that, until this and the other difficulties with round bale cotton are corrected, it will be more profitabe for the spinner to use cotton from square bales.

This concludes the letter to Wollen und Leinen Industrie. In a later issue of that journal are published the results of an inquiry among Russian, Austrian and German spinners as to the advantages of the round bale. Thirty-two firms and one mill manager, representing in all one million spindles, declared in favor of the round bale, while six firms, representing about one million spindles are recorded against the round bale. Measured by the number of spindles represented, the sentiment is about equally divided.

Some of those who favored the round bale advanced figures and statements in respect to the difficulty of unwinding, moisture, and expense of handling, which were in direct contradiction to those in the article already quoted. The opinions of those opposed to the round bale agreed with the statements in the article; several of the opponents of the round bale stated that their tests had been made when the bale was first introduced.

COTTON DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

Comb for Medium Staple Cotton.

STAUB AND MONTFORT SYSTEM.

The following paper on the Staub-Monfort cotton comb for medium stapled cotton was presented recently to la Societe industrielle du Nord, France, by M. Paul See:—

The top comb is dispensed with. The cylinder combs the head and tail ends of the tufts simultaneously. The ribbon is very wide. The production for two heads will reach 121 lbs. per day. It occupies very little space,

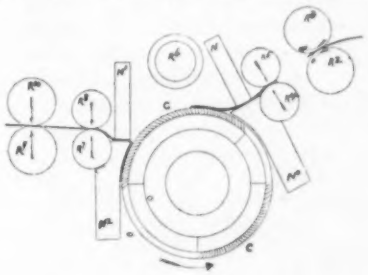


FIG. 1.

is simple and easy to regulate, costs very little for repairs and will comb medium American cotton.

In actual operation an occasional nib occurs in the combed material, but the inventor is now working on a remedy for this trouble. The different stages in the operation of this comber are as follows:

Fig. 1. The tuft is separated from the lap by the rolls R4, R5; the rolls R2, R3 retain the rest of the lap; the part detached passes between the nippers N and N o, after which these nippers close together; the comb C combs the head of the tuft; the tufts already combed have been joined together and the tail end of the last tuft is held by the nippers N1, N2; in this way the tail end of the last and the head end of the new tuft are combed at the same time; during this combing all the rollers are at rest except the feed rolls R2, R3 which are delivering a new tuft ready for detachment.

Fig. 2. The comb has combed the tail end of the preceding tuft, which is carried to the fluted segment of the comber, and the press roller R6 is being lowered; the two pairs of nippers are closed: the feed rolls R2, R3 have delivered a new portion of the lap, which is seized by the rolls R4, R5 and carried forward.

Fig. 3. The two pairs of nippers have opened, liberating the tufts; the preceding tuft, of which the tail end has been combed, is carried forward by the rolls R7, R8, R9 and R10. These rolls are adjusted to draw or stretch the strand slightly; the other tuft, of which the head end has been combed, is pressed between the fluted segment and the press roll R6, and carried forward so that the head end is lapped on the tail end of the preceding tuft; the feed rolls R2, R3, having moved forward, are reversed while the rolls R4, R5 continue to advance, breaking the lap and forming another tuft, which is carried forward and placed between the nippers N, N o and within reach of the comb; in this position there are two tufts detached, one with the tail end combed and ready to be lapped on the preceding tuft, the other not yet combed, but in position for that operation.

Fig. 4. This diagram shows the following movements of the cotton: The feed and detaching rolls, R2, R3, R4, R5, are at rest; the nippers, N, N o, are closed and the comb commences to pass through the head end of the

detached tuft; the fluted segment has passed and the press roll, R6, is raised, the back nippers, N1, N2, are open; the rolls, R7, R8, R9, R10, complete their movement and the tail end of the tuft is left in the comb. The series of movements is now nearly completed.

Fig. 5. Here we see the parts in position just previous to the position shown at Fig. 1; the feed and detaching rolls are at rest; the nippers are closed and the press roll R6 is raised, but the comb begins to comb the tail end of the attached tuft.

In this machine the tuft is combed only after it is broken off; there is no top comb; all of the attaching and detaching rolls move but one forward direction; a very thick lap can be combed; the two ends of the tufts are combed gradually by the combing cylinder as the set of the teeth increases gradually in fineness. The chief advantage is the absence of a top comb, which is difficult of adjustment. Combing both ends of the tuft results in a saving of the staple and better combing of the fibre. The ribbon is uniform and the noil contains all that should be removed from the stock. The waste in American cotton is from 22 to 24 per cent.; the staple is not injured and all of this waste can be used. The comb has two heads. The lap is 12½ inches wide. [Schwartz & McKerrow, 31 State St., Boston, are the American agents for the Montfort Comber.]

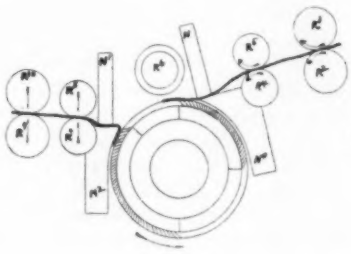


FIG. 2.

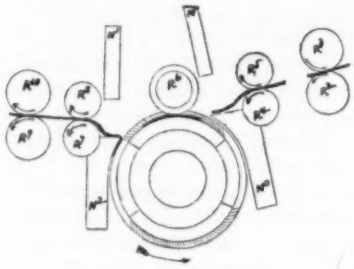


FIG. 3.

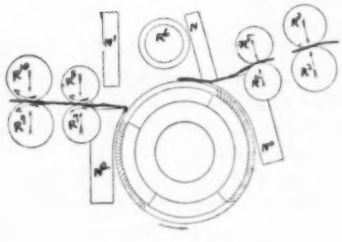


FIG. 4.

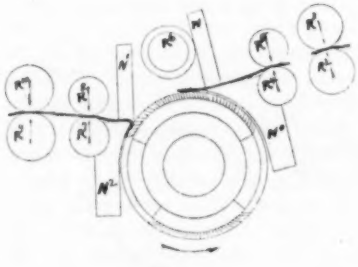


FIG 5

The Art of Sketch Making.

S. T. L.

II.

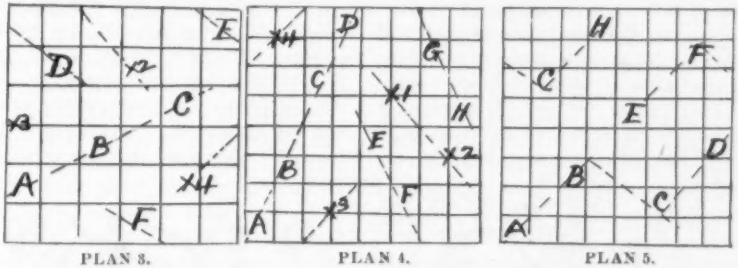
(Continued from February.)

THE SIX POSITION ORDER.

This is another very useful arrangement; the 4 inches in this case is divided in 6 equal spaces of ⅔ inch each into the centre of the third of these put the figure B, sketch 5; next take a tracing and put in centre of C upside down at a distance that will look best, always bearing in mind the amount of ground you want for your trail, the length of the repeat in this instance being exactly six times the length of the distance from the ex-

treme top of B to the extreme top of C; in this case being from M to P, ⅔ inch, and ⅔ × 6 = 4 inches, or one repeat of the finished.

This is a very important point, as each one-sixth of an inch between these two first figures makes the repeat either one inch shorter or longer; next draw a line exactly between



PLAN 3. PLAN 4. PLAN 5.

these two figures as line K; then draw other two lines below and other four above with a distance between each equal to that between the first two figures, which is in this instance two-thirds of an inch; this will enclose six spaces lengthways.

Place figure A the same as C, then taking these three figures as one set

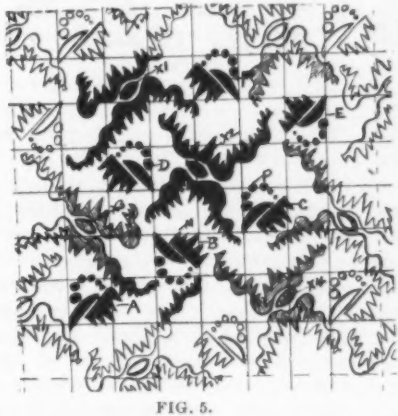


FIG. 5.

figure, reverse into the squares marked in plan 3, E and F. The six figures have three figures leaning one way, and three the other way, and the two equadistant figures B and E are upside down.

After having copied in a figure both ways to show the repeat, the next thing is to find some centres on which to place the heavy or principal effect. If these are put in as X1, X2, X3, X4 in plan 3 and sketch 5, they will occupy a 4 position order, thus reducing unevenness of trail to a minimum.

Now put the principal features of trail onto sketch with X1 and X2 as centres or as near as possible without making it look stiff; next put in the other parts of trail, care being taken in this as in all the examples not to work on the spaces that will be taken up with the trail when reversed.

Now taking a tracing of the trail, reverse with centres X1 and X2 on X3 and X4. After having traced this in, and also filled the repeats of trail in, look well over for faults, taking care in this as in previous examples

FIG. 6.

to alter in both first and reversed portions also in the repeats of same. Rule a line round as shown by dotted lines, leaving a portion of repeat inside; paint up and then clean all the unnecessary marks with the rubber; the finished sketch being shown in sketch 6.

THE BROKEN EIGHT POSITION ORDER

This order is also frequently used,

but is not as popular as the 4 and 6 orders. Although we get a greater variety of positions before there is a repeat, the disadvantage lies in the fact that, if not moderately small figures, this order gives a very elongated form of sketch, a thing to be avoided.

To work up a sketch for this order proceed as follows: Divide the 4 inches into 8 equal spaces of ½ inch each. Put the first figure in centre of the first space at A, sketch 7 and plan 4; next take a tracing and turn upside down. Locate the second space at a reasonable distance as B, bearing in mind the space required for the particular trail or second effect desired. The full length of the sketch in this order is 4 times the distance from the extreme top of A to the extreme top of B, which in this instance is 1 inch; 1 inch × 4 equals 4 inches for the full repeat of sketch; divide this 4 inches into 8 equal spaces from top to bottom taking care to rule the lines so that each of the two figures already on, are in the centre of their respective squares.

Place C like A, and D like B, then take these four as a set figure and reverse into the spaces E, F, G, H. E corresponding with D, F with C, G with B and H with A in reversed order. We now find 4 figures leaning to the right and 4 to the left; 4 of these being upside down and in such positions that a reversible trail can be put in to fit with the same figures in the corresponding places.

After tracing in a figure on each side to show the repeat, the next thing is to find centres to work a trail from, or on which to place a second effect. On close examination of the broken 8 order, it will be noticed that it is really a broken twill and the letters B, E, H, C forming one twill, and G, D, A and F the other one. If the centres of the second are put on as X1, X2, X3, X4, it will be noticed that X1 and X2 cut across the first twill, and X3 and X4 cut across the other; also that these four X's are also in a 4-position order.

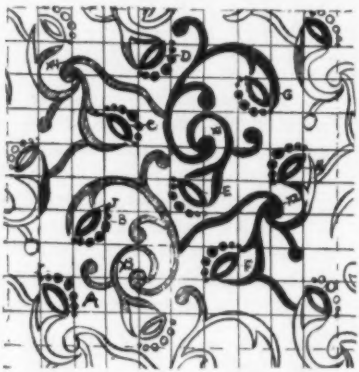


FIG. 7.

FIG. 8.

Take X1 and X2 to start from, and work in half the trail, taking care as in all previous orders not to draw on space that will be taken up with reverse trail; take tracing of trail and reverse; draw in after copying the repeat. Examine closely for faults, taking care to alter in both places; then line round a little above one repeat each way, as shown by dotted lines, and paint in. These different positions shown in sketch 8, are by far the most popular for use in the textile trade.

The straight 8 position sateen order, plan 5, allows of the figures being twisted different ways, the disadvantage in this as in all other straight sateen orders being the diagonal effect they give. Following is the best way

to turn these in most instances. Put in A, then turn B upside down then C like A reversed, and D like B reversed; then make E like A, F like B, G like C, and H like D; then whatever trail or second effect comes round A, B, C, D will come round E, F, G and H exactly the same way, not reversed as in all previous examples.

In sketches of an all-over character that do not come under the 4, 6 or 8-position orders, it is best to get the general character put in a little under the first two inches; then trace and turn upside down, joining up in the best way possible, if faulty; keep altering until right, taking care whatever you alter in one place to alter in the upside down portion.

If a sketch of this description has a principal feature, it is best to place this in the 2-position order, working the minor parts in after as explained before. All orders explained so far have been given as though but a part of a pattern or idea had been given to work up into a sketch, consequently the length of the repeat of sketch has not been known until a couple of figures have been worked up. The professional sketch-maker who works up sketches entirely original, and who is following no idea or style except what suggests itself at the time, usually has a more expeditious method of making these sketches.

He will take perhaps a dozen papers and rule out for the same position, say the six-position order; then ruling into four inches in width and three, four or five inches in length, or any other width and length according to fancy, and taking a spare sheet of paper, he will draw out a few figures and picking a dozen suitable ones out, he will trace the positions as described in plans, having first ruled his papers to correspond. Then he will originate trails or second effects for these; taking another dozen papers he proceeds in the same way getting fresh figures and trails of course, and putting in a different order, say the 4-position order, etc., until he has run through all the different orders.

The Manufacture of Velveteen.

III.

(Continued from July.)

Figured velveteens were formerly made with combinations of weaves shown in the preceding article. These decorations may be made by variations of the same weave, by combination of different weaves or by combining velveteen with a close finished face.

(Fig. 7) represents a weave broken between each sixty filling threads. This gives an effect known as "grain of wheat." The goods are woven; two pile threads and one ground thread, the last being woven with a four-leaf twill. (Fig. 8) shows a plan of the finished cloth; the first cut of the knife cuts the squares (A); the second, the squares (B). The cutting of this class of goods is easy, but requires a very slender knife. The dotted lines (Fig. 8), indicate the cutting lines. To lay out the weave the pile picks should first be marked, showing the stitching lines of the same; the ground weave can then be filled uniformly from one end of the draft to the other.

With the weave shown at Fig. 10 one stripe of velveteen alternates with one of ribbed velvet. The rib is first cut and then the velveteen. Fig. 11 shows a cord alternating with ribbed velvet and, like the preceding fabric, requires two cuts of the knife. In a similar manner a great variety of stripes of various ribs can be produced; checks and squares can be be made in the same way, but these effects are not much called for.

Fig. 12 shows a diagram of a checker-board effect for velvet, the width of the pile in the motive being double that in the ground work. The objection to this design consists in the long chain required; this objection applies more or less to all velvets owing to the large number of picks per inch necessary for this fabric.

Fig. 13 represents the combination of a "cannele" and a "kinscord"

weave to produce an effect similar to that of Fig. 12. In this way a great variety of designs can be produced.

The method of decorating velvet by a combination of two different weaves in which only part of the surface has a velvet face, is but little used and only for very light fabrics. These effects are produced by passing the pile threads to the back of the cloth. Fig. 14 shows an example of this fabric; a rib effect alternates with a stripe, in which the pile threads are thrown on the back producing a bare

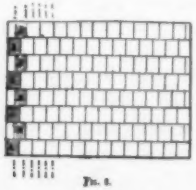


Fig. 8.

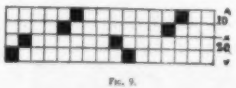


Fig. 9.

Fig. 10.

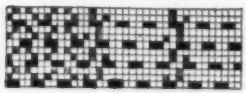


Fig. 11.

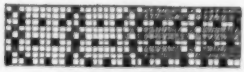


Fig. 14.

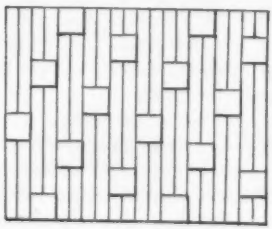


Fig. 12

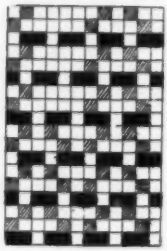


Fig. 13

Fig. 15.

wise the goods will have a wrinkled effect, owing to the varying tension to which the different parts of the warp will be subjected.

(Figs. 18 and 25) are drawings of various effects produced by the weave as they appear before cutting. The continuous lines show the manner in which the pile threads are stitched to the ground work, and the dotted lines show the direction in which the pile is cut.

(Fig. 18) shows a style in which the effect on the face. Fig. 15 is a cross section of this fabric after it has been cut. By cutting the back of this cloth a double-faced velvet can be produced; by dispensing with the stitching (a, Fig. 15), and brushing the cloth on the back after the face has been cut, the pile picks floating on the back can be torn out, thus pulling out the pile at (b) on the face, and giving it a cleaner, sharper edge.

Where a bare face is combined with a velvet effect, it is necessary to let the pile picks float on the back, otherwise the goods will have a wrinkled effect, owing to the varying tension to which the different parts of the warp will be subjected.

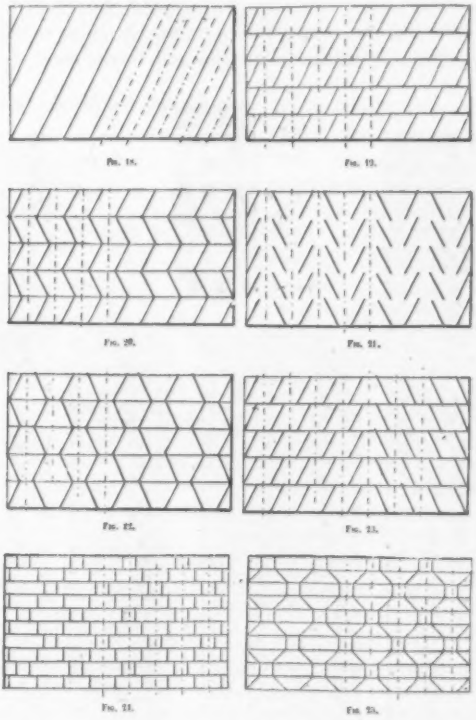
(Figs. 18 and 25) are drawings of various effects produced by the weave as they appear before cutting. The continuous lines show the manner in which the pile threads are stitched to the ground work, and the dotted lines show the direction in which the pile is cut.

(Fig. 18) shows a style in which the cut is made diagonally; this is very little used; in all of the other designs the cutting is done lengthwise in the usual manner.

(Fig. 26) shows the weave used for the design at (Fig. 19), the ground work being woven with a three-leaf twill.

The zigzag effect shown at (Fig. 20) is produced by the weave at (Fig. 27), the ground being a plain weave. The weave shown at (Fig. 28), is used for the saw-tooth or fish-bone effect shown at (Fig. 21).

Double-faced velveteens have not been made long enough to enable us to speak of them with certainty; (Fig. 29) shows a weave used for a double-face velveteen, which requires two separate cuts of the knife.



The Card Grinder.

It is important that the operatives who attend to the grinding of the cards should realize the importance of this work and the marked effect it has upon the quality and cost of the goods.

Let them be shown the difference between well carded and poorly carded yarn; tell them about the cost of each and what they sell for; take them to the warper and slasher room and show them the imperfections in the work caused by careless grinding of the cards; impress upon them their responsibility by a visit to the cloth room or yarn inspecting room; this will be found to work wonders in the quality of the production.

For a number of years I was a card grinder, had a varied experience in a number of mills and have been brought into contact with a large number of men who do that work. I have never met a grinder who knew anything about yarn or cloth, or had any but the crudest ideas as to the effect of his work upon the appearance or value of the goods; one of the reasons why so many grinders do poor work is because they do not realize that the success of each succeeding operation and the value of the finished product depend on the cards being well ground.

When I became a second hand and had an opportunity to learn by contact with the overseer what was required of the carding room, I was very much surprised to find that the grinder was of some importance, and that a great deal depended on him; but when grinding, I carried the same idea that many a good man carries today, viz., that he or his work

does not amount to much anyway, and that no more credit is due him for his extra pains and labor than if he had just simply held to the old policy of six o'clock and pay day.

There is no machine in the cotton mill that responds to good care like the card, and there is no place on which negligence and unskilfulness is so costly than here. If the work of card grinders is of so much importance, why not treat them according to their value and make some endeavor to assist them in gaining a better knowledge of their work?

It would be a good plan to send to the machine builders for an expert to teach the grinder the whole business of grinding cards. This would often avoid the necessity of having that same expert come after the cards are bunged up and the clothing ruined. Why not show the man who grinds the card how much depends on his work, and, by giving credit for what he accomplishes, keep him moving in the right direction? When I was grinding I once reduced the scavenger roll waste from the spinning room one-half. The boss spinner received the credit for the improvement, a result that was not calculated to increase my zeal in effecting further economies in that direction.

Sending this waste back to the card room from the spinning room is a good check on the grinder as it is the only sure indication the carder has as to how the work is running.

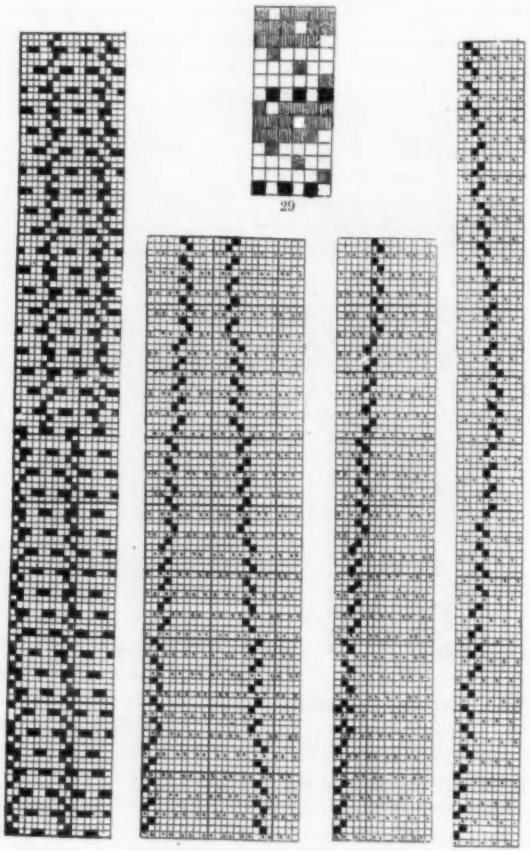


FIG. 7. FIG. 28. FIG. 26. FIG. 27.

WOOLEN DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

Finishing Wool and Mixed Fabrics.

IV.

BY N. REISER.

Translated from the German for the Textile World.

(Continued from July.)

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FANCY CARDED WOOLENS.

No general directions can be given for the raw material and size of yarn required for these fabrics; they are made in very fine, medium and cheap goods. We will describe three methods of finishing.

1. The goods are burled and sewed as the fabric may require, then weighed and measured. Frequently they are fulled in the grease without previous washing; it is, however, considered a good plan to scour the goods before fulling, as the colors are apt to be dimmed by fulling in the grease.

The goods are fulled directly after washing, in case it is not considered necessary to dry them out for the purpose of sewing in threads. Strong soap and high temperatures should be avoided in fulling, as these injure the colors; the temperature in the fulling mill can be lowered by keeping the doors open or by removing the cover of the mill.

After fulling the goods are treated in an acetic acid or salt bath which brightens the colors very much. The goods are now extracted and gigged. The gigging is begun with dull, and finished with sharp work which varies according to the fabric. In case the colors will stand the operation the goods are wound on rolls and left for some hours in order to lay the nap well; the pieces are then extracted, dried and back burled.

If a bare face is required the goods are brushed before shearing, and then sheared, first with the nap and then against it. The goods are now gigged on the back, steamed, given two runs on the shear, pressed, steamed lightly on rolls and immediately unrolled. In case the colors are bright, the steam should be shut off as soon as it passes through the roll of cloth, and the goods immediately unrolled and later given a second steaming. It is also advisable to wind the steaming roll with several layers of clean cloth before the goods are wound on it.

2. After burling, sewing, weighing and measuring the goods are scoured with a good quality of soap and ammonia. In case it is necessary to sew in threads a second time, the goods are dried and, after the sewing, are fulled.

After fulling and rinsing the goods are gigged on the back and then on the face; the gigging depends altogether upon the fabric. In some cases where they are very fine a second gigging and shearing are found necessary. After drying and shearing the goods are pressed twice in the hydraulic, and steam blown on rolls according to the fastness of the color.

The better grades of goods are sometimes wet out and gigged again with dull work. They are then extracted dried, brushed and sheared. Care should be taken, however, that the ground work of the fabric remains well covered; they are then pressed lightly, steamed on rolls and exposed

to the air. The cheaper grades of goods are steamed lightly on rolls and then immediately pressed for the last time.

3. After burling, sewing, weighing and measuring the goods are fulled. In fulling they are shrunk lengthways from four to six yards per cut, as the latter operations of washing and gigging will stretch these pieces out again; they are then extracted, dried back burled, steamed, sheared, specked, pressed in the rotary, steam blown and exposed to the open air. In case the color has been dimmed by fulling or washing the goods are treated in an acid bath. Acetic acid is the best for this purpose; sulphuric acid and salt are also used.

ENGLISH METHODS OF FINISHING.

After burling and sewing the goods are washed, and then fulled. Care is taken to shrink the goods as little as possible. The goods are then scoured in a warm bath of weak soap and ammonia and rinsed in cold water; they are then dried as soon as possible, sprinkled with cold water, and left in this damp condition for some time. Afterwards they are back burled, brush and sheared in both directions. They are then sewed, steam blown and pressed in the hydraulic. Frequently goods are made in England and Scotland with yarn that has been scoured; such goods require no washing before fulling, and are fulled but five or ten minutes with very weak soap, rinsed well and then handled as above described.

MOUTONNES.

By Moutonnes we mean very soft thick over-coating stuffs with a more or less shaggy face. Fine wool only is used for filling, as the nap is obtained almost entirely from the filling threads; a somewhat coarser wool is used for the warp; combed top is sometimes used for the filling of these goods, in which case the top is carded and spun by the woolen system.

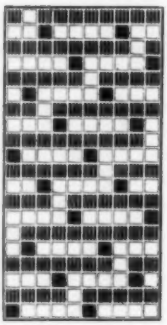


FIG. 22.

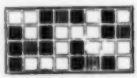


FIG. 21.

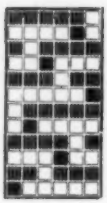


FIG. 23.

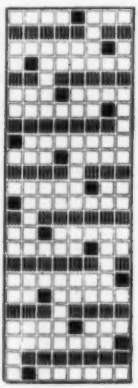


FIG. 28.

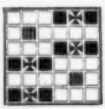


FIG. 24.

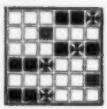


FIG. 5.

The warp is spun from 3 to 3½ runs, and filling about 2½ runs. Sometimes 3¾ filling is used; in such cases it is woven two picks in the shade. Various weaves are used, two being shown at Figs. 21 and 24. The weave at Fig. 21 is frequently used for goods with about 3000 ends in the warp, 75 to 79 inches wide in the loom and with filling spun as already stated.

For the weave at Fig. 22, in which a backing filling is used the warp contains about 2400 threads 3 to 3½ run yarn, woven from 75 to 79 inches in the loom. The face filling is spun 3¾ runs, woven two picks in the shade; the back filling is spun 1⅝ to 2 runs, the weave shown at Fig. 23 is sometimes used for this fabric, but in this case the backing filling should not be twisted so hard.

Fig. 28 shows a weave in which two threads of face and one of backing is used for filling; the face is woven with an eight leaf broken satin weave. The warp is dressed with 2800 threads of 2¾ to 3¼ run yarn, woven 79 inches in the loom; the face filling is spun 3¾ runs, the back filling 1⅝ to two runs.

This class of goods is finished as follows: The pieces are first carefully burled, sewed, measured and weighed. Sometimes they are scoured out before fulling; after fulling they are rinsed well, treated with fuller's earth, again rinsed, extracted and gigged first on the back and then on the face. The gigging is begun with sharp work in order to raise as thick a nap as possible in the shortest possible time.

After gigging the nap is brushed down on a wet gig, the goods wound on rolls and left for twelve to twenty-four hours, the rolls being turned end for end occasionally during this time. While being dried the nap is laid well by brushing.

Piece dyed goods after back burling are next pressed hard in the rotary, steam blown for twenty minutes, left to stand for twelve hours and then colored. These operations are for the purpose of giving the necessary lustre to the goods, so that it will not be necessary to so treat them after fulling to impart lustre.

Wool dyed goods after drying and back burling are pressed hard in the rotary both back and face; they are then steam blown for fifteen minutes and left to stand for five or six hours. The lustre is then removed by forcing cold water through the goods for two or three hours. The nap is then brushed; the goods are now wound on rolls and left for twelve hours and then dried. The goods are next handled dry on the velvet raising machine. This is a machine in which the goods pass over a narrow rest or edge; at this point a revolving cylinder covered with card clothing raises a nap; the position of the cloth during this operation exposes the filling to the direct action of the wire, the nap on these fabrics is produced by the filling fibres. Frequently the goods are handled on a machine which brushes the nap diagonally giving the face a wavy or tangled appearance. After this operation the goods are brushed, which completes the finish.

VELOUR OR VELVET STUFFS.

There are two methods of producing a velvet finish; first, by gigging out the filling threads floating on the face; second, by cutting warp or filling threads either on the loom or after weaving. We will consider here the first method.

What has been said in regard to raw material for Moutonnes applies to this class of goods. It may, however, be stated that the stock for the filling should be shorter. Clear noils were formerly used for filling, as long wools only were combed and the noils, consequently, were of a better staple; now, however, the noils are so short that it is necessary to use a percentage of wool.

The finish of these goods is as follows: After having been carefully burled, sewed, measured and weighed they are scoured, fulled, well rinsed and treated with fullers' earth. They are then well gigged and given from three to six sets of work in each direction; the pieces are next wound on rolls and, with an occasional turning end for end, are left for twelve hours, then run through the beating machine and immediately dried. A long leader should be sewed on each end so that the pieces will be thoroughly gigged and beaten at the extreme ends. When completing the gigging the pieces should be reversed at each run. The goods, after having been run through the beater, should be dried immediately, as they will stand pressure better in the dry state than when wet.

After drying the goods are run through the velvet raising machine, thoroughly steamed, cropped on the shear or, when necessary run through the beater a second time and again cropped. If the card clothing of the velvet raising machine is made of brass wire the greater part of the gigging can be done on this machine.

MOHAIR VELVET.

These goods, also called velvet d'Utrecht, are velvets in which the pile is made of mohair; the ground warp is cotton, the pile warp mohair, and the filling cotton. For forming the pile metal rods, in which grooves are cut, are woven in the goods, and the warp threads raised by these rods are cut by a knife for which the grooves serve as guides.

Two weaves used for these fabrics are shown at Figs. 24 and 25. The one at Fig. 24 gives the best results, as the mohair thread comes between the two ground threads; on the other hand the goods weave easier with the weave shown at Fig. 25 as the ground threads work together, while in the former case they are separated by the pile warp.

In weave shown at Fig. 24 the first and third of each three threads are ground threads, the second being the pile warp.

In the weave shown at Fig. 25 the first and second of each three threads are the ground threads, and the third the pile warp.

The first and third filling picks in each weave are for the ground threads, while the second is where the metal rod is introduced.

These goods are finished as follows: As soon as the goods come from the loom they are steamed in a boiler for one or two hours at a pressure of two atmospheres, in order to cause the fibres of each pile thread to separate and stand erect on the face of the goods. The goods are then washed with a weak alkali solution and run through the beater while still wet, then immediately tentered, dried and cropped on a special machine which is equipped with a steaming and velvet raising device.

The goods are next colored in a special dye vat, shown at Fig. 26, in which the pieces do not pile up in heaps as is the case in the ordinary dye kettle. The goods should not be handled with sticks during the dyeing. After coloring they are rinsed in clear water, run through the beater while wet, tentered, dried and again cropped.

In order to give the fabric a soft silky feel the goods are sized until the desired handle is obtained. This process is as follows: 2½ lbs. of linseed, 2½ lbs. of fish seed and 2½ lbs. of dextrine are dissolved separatel, each in five gals. of water, and then boiled, after which the mixtures are strained through a sieve to remove the seeds and shells. When cold they form a jelly like mass, and are mixed together in a clean vessel. 3 3/10 lbs.

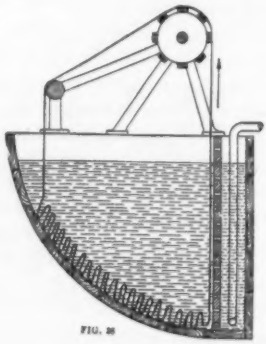


FIG. 26

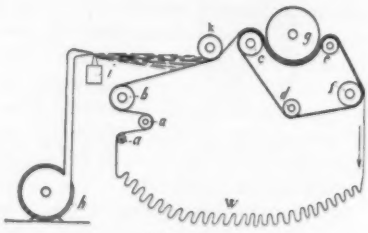


FIG. 27.

of glycerine is added, and the mixture is boiled for twenty or thirty minutes and stirred well in the meantime. If too thick it is diluted with boiling water. This preparation is stored only in tightly corked carboys in a cool place, as it easily ferments. For this reason only enough for immediate requirements should be prepared. An addition of boracic or salicylic acid is made to counteract fermentation.

For treating the goods one quart of this mixture is boiled thoroughly in five quarts of water, filtered and placed in receptacle of the sizing machine. This machine is provided with a rapidly revolving cylinder, (K),

covered with felt, which serves to rub the sizing material into the pile of the fabric. A felt apron passes over driving, carrying and tension rolls, which are adjusted to bring the apron against a rapidly revolving polished brass cylinder. The plush runs between this cylinder and the apron. Fig. 27 is a sectional drawing of such a machine; (a, a), are tension rolls; (b), a carrier roll; (c), a friction roll; (d), a tension roll; (e), a carrier roll; (f), a driving roll; (g), a polished brass cylinder; (h), an air pump and (i), a receptacle for holding the size. This process gives the pile a high lustre; the goods are passed through the machine as many times as are required for the desired finish.

The pieces are next suspended in a boiler and steamed at a pressure of one atmosphere for three hours; they are taken out and while still wet run through the beater, tentered and dried.

(To be continued.)

Reducing Waste in the Spinning Room.

We will assume that the roving delivered to the spinner is as near perfect as it can be made, and consider the methods which can then be employed by the spinner to reduce the waste in the spinning room.

I require the spinners to run their spools down to the last draw if possible and, if this cannot be done, the spinners are not allowed to take their stock from this spool until they have shown it to me. In this way I make sure that the spinners themselves do not make any unnecessary waste. They carry the soft waste to cards two or three times a day. There is a basket at each breaker feed in which this waste is placed, and when the card tender fills the feed box he puts a handful of this waste in the feed; in this way the waste is distributed evenly throughout the batch, and the bad results which follow the placing of a large quantity of soft waste in the feed at one time, are avoided. The waste from each lot is weighed as soon as the batch is spun. This waste varies from two to eight pounds on a thousand-pound lot.

If the lot is on two sets of cards one of them is broken off before the other so that an excessive amount of waste will not be left over in the spinning room when the lot is run out. If I have a few pieces left when the lot is run down, they are put on one end of the machine with the next lot. Considerable waste can be saved in this way, but of course it is necessary that both lots should be the same size when this is done.

DURHAM.

Process for Scouring Wool.

A resident of Verviers, Belgium, has secured a patent in the United States for a process of wool scouring by the use of carbon tetra chlorid.

He claims:

First. It permits, in comparison with ordinary washing, an easy recovery of the product employed and of the fat extracted from the material treated.

Second. It gives absolute safety, owing to its being neither inflammable nor explosive as compared with the use of naphtha, benzine, petroleum, or like products, which are dangerous in the liquid condition, and also in that of vapor by reason of the formation of an explosive mixture with air. The carbon tetra chlorid does not require the isolation of the rooms in which it is employed or any increase of insurance premium.

Third. The treatment can be applied to wet wool, so that wool after it has been freed from potash can be treated at once without any preliminary or intermediate dryings, which are required when other solvents are employed and which involve labor, expense, and delay.

Fourth. The process can be applied to small quantities of wool as economically as to large quantities.

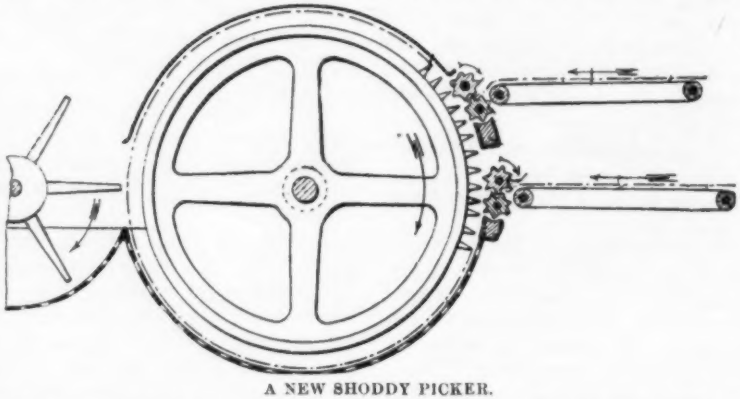
Fifth. When the process is adopted, wool can be treated continuously—that is to say, freed from potash and from

fatty matters and clean scoured—these successive operations being carried on without any handling of the wool, an advantage which cannot be obtained when there is treatment in closed vessels.

In employing carbon tetra chlorid as a solvent for the fatty matters contained in wool he takes advantage of the fact that the specific gravity of the solvent is considerably greater than that of water, so that, while it is acting on the wool, it can be quite covered by a layer of water, which prevents its evaporation. He states that the removal of fatty matters from wool can be effected in almost any of the well-known apparatus for washing wool, which consist of a tank along which the wool is propelled while it is agitated with feeding-rollers at the one end and squeezing discharge-rollers at the other end. A quantity of carbon tetra chlorid is substituted for the scouring liquor usually employed, and is protected against loss by evaporation by a quantity of water which forms a layer above the tetra chlorid. The wool, as it is agitated and propelled through the tetra chlorid under water, has the fatty matters dissolved these forming a solution with the carbon tetra chlorid, from which they can afterward be separated by distillation in the usual way, the solvent being recovered and used again. Such portions of the solvent as adhere to the wool can be distilled off by passing the wool through a heated space after treatment.

An Improved Shoddy Picker.

Some time ago we called attention to a shoddy machine patented in Austria, by which it was claimed that rags and yarn waste could be picked into shoddy of much longer staple than is possible by the machines now in use. We are now able to show our readers an illustration of this machine (Fig. 1); its special feature consists in the use of two feed aprons instead of one, this it is claimed, results in a greatly increased production of the machine with a thinner feed on the apron. The main cylinder is run much slower, and the inventor claims that this prevents the staple from being broken. He also claims that by using feed rolls covered with card clothing the staple of the picked stock is improved still more.



A NEW SHODDY PICKER.

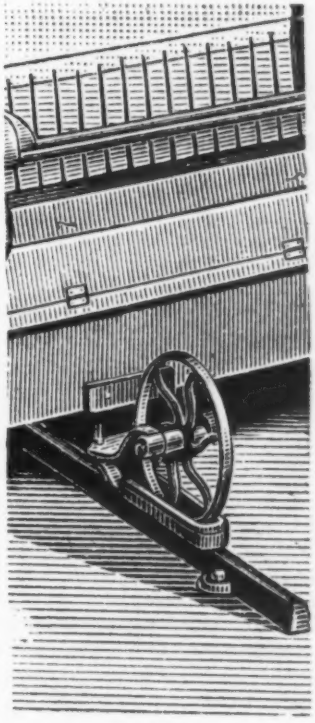
—A large carpet, measuring 9½ metres (10½ yards) broad by 15.4 metres (17 yards) long, has just been made in Germany. The carpet, which contains 3,729,750 hand-tied knots, is intended for the banqueting room of the Altona Town Hall.

—A new mordant dye, brought out by a German firm, is applied in the same bath with the mordant, thus doing away with the necessity of a separate preparing bath and avoiding the difficulties connected with matching colors, when the goods are colored and afterwards saddened.

Guard for Mule Carriage Wheels.

The accompanying illustration shows a method protecting mule spinners against accidents from getting caught under the wheels of the mule carriage.

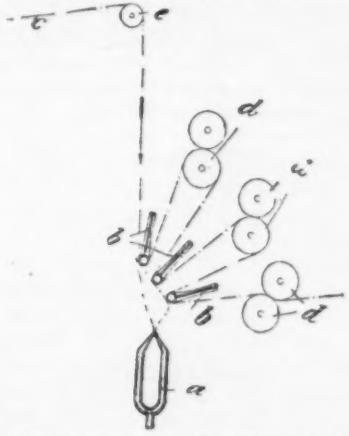
It is applied to German machines quite extensively, and consists simply of a metal hand or strap fastened to



the carriage and brought around in front of the wheel and close to the track, thus removing any danger of the operator getting caught while passing in front of the carriage.

A New Singeing Machine.

In the July issue we noted the appearance in Europe of a new device for singeing cloth. We are now able to show our readers an illustration of the machine. The cloth, (c), passes over the guide roll, (e), to the hollow plates, (b). These plates are cooled in the usual manner by a circulation of cold water. The cloth passes over the first plate to a guide roll, (d), and from here back to the next plate, (b), then to another guide roll, and next to the last plate, (b), after which it runs to the roll, (d). This brings three



folds of the cloth above the gas jet, (a). The plates are so adjusted that the flame strikes the three folds sideways. It is claimed that by this arrangement the production of a singeing machine can be greatly increased, dispensing with successive runs which are required on machines where there is but one exposure of the cloth.

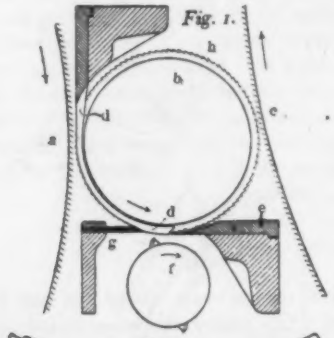
A Wool Burring Device.

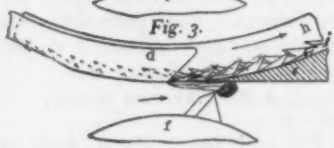
The attachment for a wool card, illustrated in the accompanying drawings, is the invention of a resident of Leipzig, Germany, and has for its object the removal of burrs, threads and other hard substances from the wool during the process of carding.

Fig. 1 is a cross section of the attachment placed between the two carding cylinders, (a), and (c); Figs. 2 and 3 are enlarged views of the point of contact between the beater and the burr cylinder; Fig. 4 is a side view of the burr cylinder and beater; Fig. 5 is a view of the burr cylinder looking from below.

The wool is taken from the card cylinder, (a), by the burr cylinder, (b). Rings are set on this burr cylinder.

and separated slightly from each other so that a recess is between them. Teeth are cut in these rings as shown in the illustration. Between each ring of the burr cylinder a plate, (d), is set; these plates are held firmly by being fastened to the girdle as shown in the illustration. This plate is shaped so that the teeth of the burr cylinder at the point of contact with the carding cylinder, (a), project beyond the plate. The lower end of the plate, (d), is



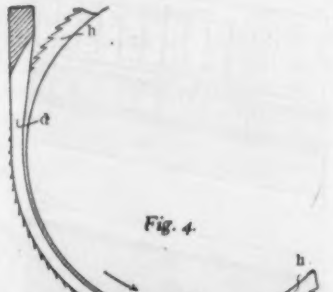


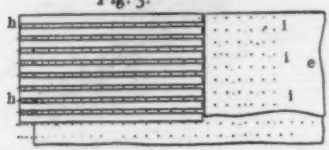
made wider so as to project beyond the teeth.

Any burrs or hard foreign matter in the fleece which may pass from the carding cylinder, (a), to the burr cylinder, (d), are carried along and, when they reach the point where the plates, (d), project beyond the burr cylinder, these lumps are pushed out of reach of the teeth of the burr cylinder by the plates. A brush, (g), fastened firmly to a girder presses against the teeth of the burr cylinder, and thus aids the cylinder to retain the wool fibres.

A guard, (e), is set just in front of the end of the plate, (d), so that any wool fibres projecting above the plate, (d), will be pressed back on the burr cylinder, while the passage of burrs coming down from the plate, (d), will be stopped at this point, as the room between the guard and the ends of the plates, (d), is too small to permit the burrs to pass through.

In order to prevent the fibre clinging to the burrs from being thrown out with them, the inner side of the guard, (e), is provided with teeth, (l), which fit in between the rings of the





burr cylinder, and point in the opposite direction to that of teeth in these rings. The fibre hanging to the burrs is thus held by these teeth, and the beater, (f), gradually works the burr free.

In order that the burrs may be carefully and gradually separated from the fibre, the beater cylinder, (f), moves at a very moderate speed, so that at each stroke of the teeth in this cylinder, (f), the burr is carried along for a short distance, and then released, when it returns to the edge of the plate, (d). The wool fibres are held by the teeth of the guard, (e), and the alternate movement of the burrs back and forth finally frees them from the wool fibres, and they drop to the floor.

KNITTING DEPARTMENT

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

The Knit Goods Situation.

With the vacation period practically over, buyers are flocking into the market from all parts of the country, and much more activity in Underwear and Hosiery circles is manifested than has been apparent for some time.

In retail circles business has kept up remarkably well, and it is safe to say that stocks of summer underwear both in the hands of the jobber and retailer are in exceptionally good shape.

Another meeting of the fleece lined knit goods manufacturers was held at Albany on Saturday, July 27th, at which time it was agreed that the proposed advance of 12½ cents per dozen on fleeces should not go into effect before October 5th at the earliest. It was expected that this advance would have been made on or about August 1st, as many of the manufacturers were in favor of an early date, but we are of the opinion that all concerned will be benefited by leaving present prices undisturbed. A stronger tone has prevailed during the past few days in the fleeced goods market, and a much stronger feeling of confidence is apparent than was the case earlier in the season.

At the meeting referred to above, the question as to what time samples for Fall of 1902 should be shown was also considered, and it was finally agreed unanimously that lines should not be opened before Oct. 5th, 1901. This is another move in the right direction, and if it is faithfully carried out, will facilitate matters greatly by keeping the Fall samples back until business on Spring lines has been completed.

Spring underwear lines have now been open for some little time, but buyers are very conservative in purchasing. The bulk of the business so far has been in the far West; local jobbers preferring to hold back until the Fall season is well under way. Prices are slightly lower than last season's quotations, the greatest reductions being on the cheaper lines of light weight balbriggans. This class of goods opened up slightly lower than last season and, as orders were not materializing fast enough to suit the manufacturers, prices were cut, which tended to demoralize the market for a time; conditions are more settled now and it is not anticipated that any lower prices will be made.

One marked feature of the Fall trade is the greatly increased popularity of the union suit, much heavier orders being placed on this class of goods this season than at any time in the past. It is becoming more generally recognized as a most desirable article of clothing, both for men's and women's wear, and we predict for it a continued increase of popularity in the future.

The demand for ladies' golf vests still continues good, but sweaters do not seem to stand very high in the popular favor. Sales on this article of apparel have been steadily decreasing during the past season or two, and there is no indication of a better future for it.

The ladies' knit circular cape shawl referred to in last month's issue is still a strong leader in the line of Fancy Knit Goods, and it bids fair to continue in high favor for some time to come.

Business on Spring hosiery is now

fairly under way, and very satisfactory orders are reported and have been placed more particularly on the lines of fancy embroidered, lace effects and open work goods. Marked reductions in prices have been made from last season's quotations, and in a great many instances better qualities are being given at a lower price.

The strong feature of the hosiery market for next season will unquestionably be lace effect and open work goods, the strong popularity of these lines being demonstrated by the fact that some of the leading manufacturers are already sold up on some numbers and have been compelled to withdraw some of their best styles.

Many handsome styles are also being shown in embroidered goods, and these will undoubtedly enjoy a fair share of popularity. Some handsome novelties are also being shown by a leading manufacturer in the way of black extract lace effect patterns on a white ground.

From Chemnitz reports are received that orders on staples are very small, as the market is in rather an unsettled state and buyers are awaiting developments.

There has also been a falling off in the demand for split foot hosiery, which has resulted in some jobs being thrown on the market, but no appreciable changes in prices have resulted. Manufacturers of lace lisle goods, are, in a great many cases, sold up months in advance and cannot take orders for delivery earlier than February, 1902. Embroidered effects are also selling well, particularly in embroidery and lace combinations.

Fair sized orders have been booked on the Fancy Stripes, both in circular effects and verticals, all-over patterns being the best sellers, although there is some indication that boot patterns will become more popular later in the season. Jacquard effects in Men's Half Hose have been freely ordered and a tendency towards rather loud pronounced styles is noticed.

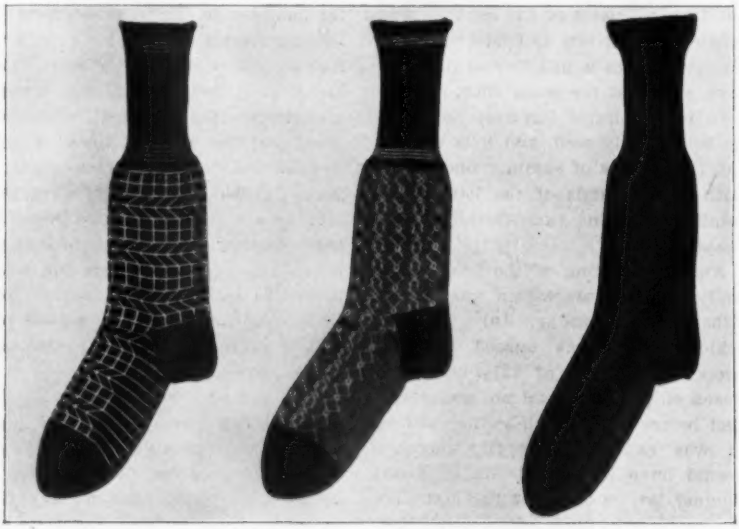


FIG. 1. FIG. 2. FIG 3.

In Figures 1 and 2 we illustrate two of the late arrivals which are considered very good styles. No. 1 is a white pattern on a black lisle ground, while No. 2 comes in blue, cerise, and cardinal grounds with pattern in white. Both numbers are made from a fine quality of lisle yarn and can be landed to retail at 50 cents the pair, and leave a fair margin of profit.

Figure 3 represents a still finer

grade of black lisle with jacquard lace effect pattern in silk, in colorings of light-blue, cardinal and pink.

On fabric gloves the bulk of the business seems to be confined to frame lisle goods in lace and imitation lace effects. A small advance in the price of this class of goods has already been made, owing to demands from operatives for increased wages. There is likely to be a scarcity of these goods before the season is over, as the production is limited and cannot be greatly increased, owing to the fact that it is all hand work and requires expert operators.

The Production of Circular Spring Needle Knitting Machines.

II.

(Continued from August.)

(Copyright 1901 by Guild & Lord.)

Before the yarn reaches the needles it lies straight across the burr spaces from one blade to the next. The entering needle presses the yarn back into the burr space and in so doing draws the yarn over the entering blade. This needle continues to draw the yarn until the full depth of the stitch is obtained, and it has to do it against the resistance caused by the needles and blades in mesh behind it. This puts a considerable stress on the yarn.

An idea of this may be obtained by lacing a string alternately over and under the fingers of one hand, holding the fingers together slightly and then drawing the string out across the fingers. It will be observed that by pressing the fingers together to a slight extent the string may be held securely. The case of the yarn entering the needles is similar to this. If the yarn "fills the gauge" the stress is quite likely to break it, or to spring the needles back so that the proper depth of stitch can not be obtained.

When one reflects that the yarn is sliding ahead over the sinker blades, traveling one and a half times faster than the blades, he understands how it is that they wear out so rapidly. He also understands how it is that the stress on the yarn is decreased by decreasing the number of needles past which the yarn has to be drawn, a result obtained by decreasing the diameter of the cylinder. Consequently, since there is less stress on the yarn and less danger of breaking it, the needle speed on a small cylinder may be higher than on a large one for the same number of breaks at the burr. Another reason why the speed may be faster on a small cylinder is that the weight of the rotating parts, cylinder, take-up, roll of cloth, etc., is less than on a large cylinder.

At the present time it is customary to put more feeds on a large cylinder than on a small one. For fleece three feeds on sizes up to and including 16", cylinders, and four feeds for a 17" cylinder and over is the usual rule; for flat work the ordinary range varies from four to nine feeds per cylinder. The average production per cylinder is lowered by the cylinders that are not in use; some of them are almost always stopped for one thing or another; some sizes may be ahead, repairs may be necessary, etc. The knitting machine maker would, of course, want to count out such cylinders in determining the production, but the purchaser would do well not to calculate in this way, for the idle machines are a cause of decreased production. They are some of the barnacles that keep the battleship from running up to her trial speed, but determine what speed can be counted on in the battle.

The production of course depends on the length of the working day. Generally a ten-hour day is taken as the unit, but this does not mean ten hours actual production. The machine must be oiled, and cleaned; stops are necessary to replace needles, tie in yarn, take out the roll, etc. The total amount of lost time depends upon a variety of circumstances. In a go-as-you-please room it may be very large. In a mill where the knitters are paid

by the pound it is sure to be quite small.

So far the average commercial production has been considered. As has been stated this is the manufacturer's figure, the basis of computation for the mill; but it has the disadvantage of being a special figure, not a general one. For instance, in the go-as-you-please mill the average may be 6 dozens per cylinder per day, but this figure will not satisfy a prospective manufacturer who means to do business in a progressive way; nor will he always get the figure that he wants from an established progressive mill, for it is probably running a different gauge, on a different scale, and with other conditions different from his requirements.

The information he wants is the actual number of pounds of cloth that comes from one cylinder per day under the conditions of number of feeds, number of yarn, gauge, stitch and speed which he anticipates. Fortunately this information may be determined by any one who chooses to figure it out. It is not necessary to depend on what some machine manufacturer says, for, although he may be honest, he may be misinformed or he may not know all the conditions.

The method of determining this production is quite simple. Suppose a thread was wound on a large wide-faced pulley, if it were known how many yards were wound on the pulley and also how much the thread weighed per yard or per any number of yards, the total weight on the pulley could be determined readily. This is essentially the problem of the knitting machine with one or two variations.

Take for example 28 gauge work, No. 20 yarn, 84 stitches to the foot of yarn, on a 20" cylinder running at 66 revolutions per minute. The circumference of the cylinder is 5.24 feet. The travel of the needles in feet per minute is 5.24×66, in feet per hour it is $5.24 \times 66 \times 60$, and in feet per day of 9½ hours actual time is $5.24 \times 66 \times 60 \times 9\frac{1}{2} = 197{,}128.8$, say 197,129. The yarn is No. 20, so there are 20 hanks of 840 yards to a pound. There are, therefore, 20 hanks of 2520 feet to a pound, or 50,400 feet per pound; if the yarn were simply wound on a cylinder, we would obtain the pounds of yarn per day for one feed by dividing the needle travel in feet, 197,129, by the number of feet in a pound of yarn, 50,400; but when the yarn is looped in the needles, one foot of yarn takes up only 4.57 inches. Consequently the number of feet traveled by the needles for each pound of yarn is $50{,}400 \times 4.57 \div 12$ or 19,194. Since the needle travel in feet per day is 197,129, the number of pounds of yarn knit per day will be $197{,}129 \div 19{,}194 = 10.25$. This is for one thread or feed. Multiply this by four to get the production per cylinder for four feeds.

The following table was calculated as follows: A 20" cylinder was taken as the basis for the production, and the speed was assumed to be 45 turns for wool, 60 for backing cloth, double cotton face, and 66 for balbriggan. It is not to be inferred that these are given as the correct speeds, or the average speeds; different circumstances require different speeds; one manufacturer believes in low, another in high and a third in moderate speed.

These figures are given as fairly representative. If they are high or low the tabulated production may be proportionately modified. Nine and one-half hours is taken as the actual running time. The backing cloth figures are obtained primarily from the weight of the face, to which 82 per cent. is added for the backing. The figures on which this table is based are taken from actual practice.

The first column gives the gauge the next four columns and their headings give particulars of the stitch, yarn, and kind of fabric; the last column gives the production per cylinder, revised in the fleece cases to give the combined weight of face and back. The other columns give figures used in calculating the production, and will be of value to those desiring to

Production of twenty-inch Spring-needle Circular Cylinder per day.

Gauge.	Stitches per foot of yarn.	Grain, hosiery, weight in grains of 18.75 feet.	Cotton number, halbrigg.	Combined cotton number of face, fleece.	Needles per inch.	Needle space in inches occupied by one foot of yarn.	Needle space in feet occupied by one foot of yarn.	Feet of yarn per pound.	Feet of needles per pound of yarn.	Distance in feet traveled by needles in 20 in. cylinder, 24 hours multiplied by 4 for 45, 60, 66 revolutions per min.	Production.
12	42	15	—	—	7.74	5.43	.45	8,750	3,938	537,624	137
14	46	12	—	—	9.08	5 07	.42	10,938	4,594	———	117
16	50	10	—	—	10.41	4 80	.40	13,125	5.250	———	102
18	55	8½	—	—	11.74	4.68	.39	15,441	6,022	———	89
"	56	—	8	—	———	4.77	.40	20,160	8 064	788 515	98
20	59	6	—	—	13.06	4.52	.38	21,875	8.313	537.624	65
"	62	—	10	—	———	4.75	.40	25.200	10.080	788.515	78
"	61	—	—	10½	———	4 67	.39	26,460	10,319	716,832	69-125
22	66	4½	—	—	14.39	4.58	.38	27,611	10 492	537.624	51
"	68	—	14	—	———	4 73	.39	35 280	13.759	788.515	57
"	66	—	—	12½	———	4.58	.38	31.500.	11,970	716 832	65-118
24	75	—	16	—	15.72	4.77	.40	40 320	16,128	788.512	49
"	72	—	—	13½	———	4.58	.38	34.020	12 928	716,832	55-100
26	79	—	18	—	17.05	4.64	.39	45 360	17.690	788,515	45
28	84	—	20	—	18 38	4.57	.38	50,400	19,152	788.515	41

make similar calculations for conditions differing from those assumed.

S. X.

Ramie Knit Goods.

BY S. B. H.

For several years back the ramie fibre has attracted much interest, and its capabilities as a raw manufacturing product have been highly extolled. In one sense this textile fibre has been at once both attractive and elusive. Possessed of qualities which render it the beau ideal of the spinner and manufacturer, hitherto the initial difficulties of its preparation have been fatal to its success. Hundreds of thousands of dollars have been expended in unsuccessful experiments, having for their object the preparation of the fibre and its manufacture after preparation, so that it could be utilized for wearing apparel.

So great have been the expectations and so lamentable the failures, that in many quarters the mention of ramie gives rise to derisive comments. This is not unnatural, but in spite of failures the beauty of the fibre has continued to command attention and to render it an object of attraction. It is idle to expect that a material which has proved itself so adapted for extensive employment and which can be produced easily in large quantities in many parts of the world will be permanently neglected. This is the less likely now, because most of the difficulties referred to have been surmounted, and it is today proved conclusively that given the material at a reasonable cost, the production of yarn, cloth and other fabrics is not only possible, but commercially a fact as our illustrations show.

Hitherto, as before said, ramie has lived in the minds of men more as an expectation than a reality, and it is only within the last three months that good, serviceable fabrics have been placed upon the English market asking for public support. The Carlskrona Hosiery Manufactory, Gustaf Ringheim, Sweden, are the manufacturers who have taken the initiative step in knitting ramie into underclothing. We have seen samples of these garments, and they seem to possess excellent qualities, and when the natural prejudice is overcome, which always surrounds a new

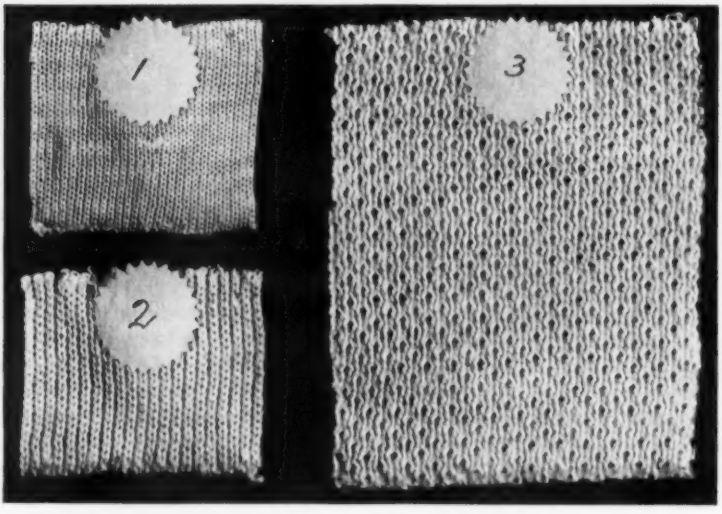
article, ramie underclothing will be extensively worn.

The great advantages claimed by the manufacturers are that ramie underclothing is comfortable to wear and healthful.

The fabrics are of great value because of the property possessed by ramie tissues of not shrinking. The thread is not at all elastic, but the tissue itself gains some elasticity through its meshy structure, and this it retains permanently. It is claimed that it has an airy, unalterable cellular tissue; that the other clothes cannot felt the meshy tissue; that the tissue possesses the property of storing warmth; that it does not hinder perspiration but rather facilitates it; that it secures complete ventilation at the surface of the body; that it receives warmth from and returns it to the skin; that it is cooling during oppressive heat and warming in cold weather; that it does not feel chilly or damp after perspiration; that it makes the skin healthy and elastic; that it does not absorb the fatty secretions of the sebaceous glands; that it strengthens and quiets the nervous system; that it prevents the germination of diseases of the skin, rheumatism etc.

Our illustrations show the fabrics made in three qualities and thicknesses. Fig. 1 shows a very fine fabric, resembling very much the superfine quality of merino wool knit good that are made into the light summer undervests and pants, so extensively used at this time of the year. Unlike woolen hose there is in the case of ramie plenty of ventilation, and while it admits freely of air it yet retains sufficient property to prevent the heat escaping, thus reducing all liability of the wearer taking cold.

At Fig. 2 is shown the same class of stuff made into a heavier fabric,



and this naturally retains more heat. For average persons this is the fabric that is largely worn and best suited for everyday wear.

At Fig. 3 the reader can see more fully what ramie cloth is like, this fabric being altogether heavier, and more suitable for winter use. The wearing capabilities of ramie are unquestionable.

The fact that ramie can be successfully spun on a commercial scale, is demonstrated in England by the experience of the Midland Spinning Company at Long Eaton. Here an average of 500 pounds weight of yarn per week has been spun during the

past three years and has found a ready sale. It is readily used by carpet manufacturers for backing purposes, also for sail cloth and various other goods.

The Loss on Imperfect Knit Goods.

Recently, while passing the show window of a prominent New York department store, my attention was attracted to a display of ladies' ribbed vests marked 5 cents per pair. Desirous of knowing more about such apparently great bargains I entered the store, and found the women swarming like bees around the counter where these goods were being sold and grabbing at them as the crowd grabs at articles at a rummage sale.

A brief examination showed me that some of the garments were "seconds," others might be called "thirds," and there were others which it would be difficult to put in any class. Evidently, the machines on which the goods had been knit were in the worst possible condition. The best garment in the stock had a dropped stitch the entire length, others had holes fairly well mended, while some had been punctured and the time spent in mending them had been thrown away. Quite a large percentage of them contained so many holes that they had the appearance of tripe.

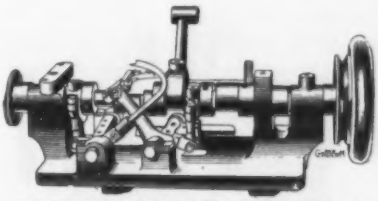
It is fair to presume that the retailer was not losing anything on them, and even if made with number 10 short staple cotton yarn, the cost of the yarn, manufacturing and handling would cause a heavy loss to the manufacturer at a retail price of 60 cents per dozen. Many of the imperfections could have been obviated even with short staple, badly carded and spun yarn. This sale was a striking illustration of the results of manufacturing in a badly managed mill. I looked over the imperfections and pictured in my mind the help in the knitting room collected together engaged in conversation, while the machines were caring for themselves.

FLEETWOOD.

The Industrial Overseaming Machine.

The accompanying cuts illustrate the Industrial Machine. From the cut from which the top plate is absent it will be seen how simply the machine is constructed.

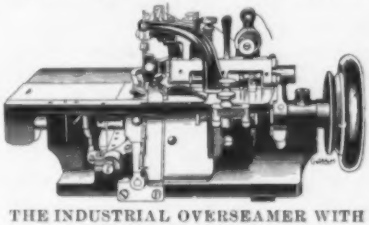
This company has been signally successful with its machines to



SHOWING SIMPLICITY OF CONSTRUCTION.

which they have been adding improvements from time to time. The ability of this machine to accomplish a perfectly elastic seam in one operation, in connection with the trimming attachments, is a virtue which all knit goods men appreciate.

We are informed that the Industrial Machine is used successfully on the seaming and over-edging of underwear of all grades, bathing suits, blankets, lap robes, cardigan jackets, jerseys, athletic goods, sweaters,

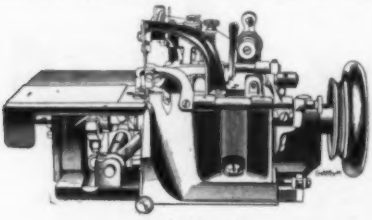


THE INDUSTRIAL OVERSEAMER WITH TRIMMING DEVICE.

fancy leather goods; in the edging of lace curtains, and has been generally adopted for making an elastic hem on hosiery and for the shaping of the same. The machine is very simply constructed, having no unnecessary supplementary motions and is a ma-

chine which any ordinary mechanic in a mill can easily understand.

The vital parts of the stitch mechanism are a looper and a spreader which form a stitch in a manner which is claimed to be hitherto unknown to the overseaming art. Many expert machinists who have examined it and have had experience with it, claim for this stitch forming mechanism the positive virtue of its not having a tendency to skip stitches easily. It is claimed the machine is so constructed that its parts do not



(*Style No. 2.*)
THE INDUSTRIAL OVERSEAMER WITH TRIMMING DEVICE.

wear out easily, even though it is capable of from 3000 to 3300 revolutions per minute.

The Industrial Manufacturing Company, Camden, N. J., is fully equipped with all modern machinery necessary for the construction of their special machines and therefore can turn out machines with parts that can be easily duplicated and which will wear excellently well. There are many branches of the knit goods industry to which this machine is especially adapted, which do not fully appreciate the superiority of a perfectly elastic overseam made in one operation. The placing of this machine on the market will doubtless cause more general demand for this peculiar kind of machine, as it is sold absolutely without royalty.

The machine is so constructed that one can both seam and edge with the same machine; so that one Industrial Overseamer is capable of accomplishing with perfection, a seam, a crochet edge and a hem, or welt or concealed stitch.

Doubtless the majority of the readers of this article have already seen this machine and therefore it is not necessary for us to go into a detailed consideration of its mechanical construction. If the current reports are true, the Industrial Overseamer takes its place in the front ranks of special sewing machines.

The company desires to do business with all responsible parties and is very glad to send machines on trial to those who are seriously inclined to do business, feeling positive that they can satisfy anyone who will give the machine a trial.

—During the past ten years, Germany's lace industry has been greatly developed, especially in the cotton branch. The imports of lace goods into Germany have decreased 20 per cent. since 1891, while the exports during the same period have grown from $6,693,800 in 1891, to $11,519,200 in 1900, an increase of 72 per cent. In cotton laces, the exports have increased $5,569,000. The imports and exports of linen and woolen laces and the imports of silk laces and embroidery show a heavy decrease; on the contrary, the exports of silk laces and embroidery have enjoyed a considerable increase. England is the principal buyer of cotton laces, the exports to that country having had an extraordinary increase, amounting in 1900 to $5,283,600. The United States bought $1,261,100 worth in 1898 and $2,356,200 in 1900.

—It is suggested by the American Machinist that a steel tape with marks 3.1416 inches apart would be useful in measuring wheels or rolls of large diameter. The tape applied around the outside would indicate the diameter in inches; those who have used a steel tape for such measuring say that it gives very accurate and reliable results.

—One always expresses well what one knows well; the mind is first among the muses.—De Sivry.

SILK DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

A Model Silk Dyehouse.

III.

(Continued from July.)

A process for the effective purification of water for nearly all technical uses, and involving the use of a certain form of syphon, shown in the accompanying illustration (Fig. 4), is based upon the principle of subsidence of insoluble matters. The insoluble matters may consist of sand, silt, etc., or they may be the result of a chemical reaction between the soluble lime and magnesia salts in the water, and milk of lime purposely added in small portions to cause the complete precipitation of all alkaline earths present.

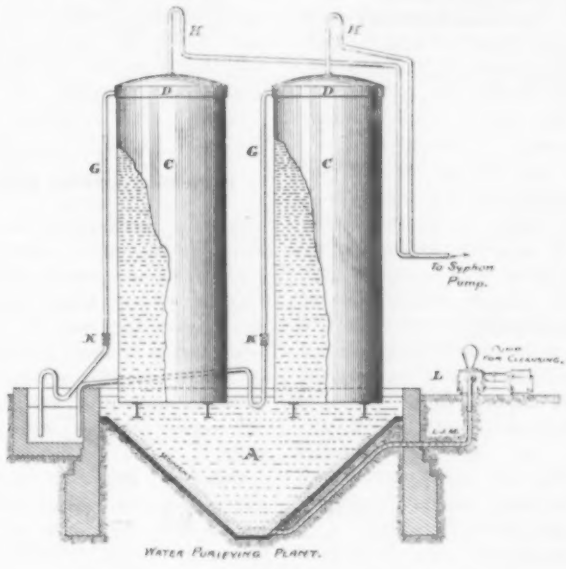


FIG. 4.

Referring to the drawing, the cylinders C, C, dip below the surface of the water to be purified, which is contained in a reservoir A. They are open at the bottom, but are closed at the top by the domes D. These are connected with the syphon pump by means of the pipes H. On starting the pump, the water rises slowly in the cylinders. As soon as it reaches the level of the top, the action of the pump is stopped, and the cocks K opened, when the water commences to flow down the pipes G, which, together with the cylinders, form a kind of syphon. If the reservoir A be kept full, the syphons can be made to act continuously. The flow of clear water being slow, the precipitate of insoluble matters is deposited, and is not disturbed in the bottom of A until an accumulation of the sediment warrants its removal; this is effected by a pump as shown in the cut.

Carbonate of lime, though practically insoluble in pure water, is quite soluble in water containing dissolved

carbonic acid gas. When this carbonic acid is neutralized by an alkali (lime or soda), the carbonate is precipitated. The sulphate of calcium is not acted upon by the lime, but the caustic soda converts it into free lime and sodium sulphate. The lime then combines with the free carbonic acid in the water, forming carbonate of lime, which is insoluble and is consequently precipitated. The following chemical reactions will make this matter quite clear, and at the same time indicate the relative quantities of both lime and caustic soda to add to complete the purification.

1. $CaCO_3$ (Calcium Carbonate) + CO_2 (Carbonic Acid) + CaO (Lime) = 2 $CaCO_3$ (Calcium Carbonate).

2. $CaSO_4$ (Calcium Sulphate) + 2 NaOH (Caustic Soda) = CaH_2O_2 (Calcium Hydrate) + Na_2SO_4 (Sodium Sulphate). CaH_2O (Calcium Hydrate) + CO_2 (Carbonic Acid) = $CaCO_3$ (Calcium Carbonate) + H_2O (Water).

Converted into figures, we find that with 100 parts of calcium carbonate in solution, or dissolved in the water, there will be required exactly 56 parts lime in the form of a cream or milk to cause the complete precipitation of all insoluble matter. It is advisable to have the proper quantity determined by a chemist, so that no subsequent trouble will ensue. Lime water is most destructive on soap, as the dissolved lime salts must be converted into insoluble lime soaps, before any scouring efficiency results, a condition of affairs that is very wasteful.

The treatment of waste water from silk mills is an important matter for two reasons; one, the probable contamination of the water supply, and the other is the loss of certain valuable constituents. As a general rule, waste water purification receives but little attention in the United States, there being but very few mills that make any effort to deprive their waste of any ingredients that are likely to prove injurious. The only attempts that have passed the tentative stage in this country, are to be found in woolen mills, where the scour liquors are worked over for "black-oil."

Waste water from silk mills, however, does not contain the large amount of foreign matter that is popularly supposed, mainly because their valuable solutions are not disposed of when once used, but are replenished and used over again by the addition of fresh stock. The soap liquors are not true waste, as there is always a continued demand for "boiled-off" liquor from dyers whose business is such that raw silks seldom reach them for dyeing.

The metallic salts used as weighting materials do not exhaust to any great extent, and are, in consequence, retained for further use; the only loss that could be so designated, would be that which is removed from the weighted yarn in the washers, and this would be trifling.

BETA-NAPHTHOL.

Decorating Ribbons with Beads.

Ribbons ornamented with beads woven in the fabric constitute a staple article of manufacture at St. Etienne. These beads can be introduced into the cloth on a harness loom, but it is more frequently done in connection with a jacquard attachment on account of the great variety of design possible with the latter loom.

Ordinary glass or metal beads, varying in size, are introduced along the edge of the goods or in squares, lozenges, trefoils or other designs in the body of the ribbon; they are strung on threads which are wound around bobbins placed behind the loom and raised above the other warp threads. These bead threads are drawn in through large glass mails, and then drawn through a special reed so arranged that a bead is allowed to pass the reed at the desired places. This reed, (Fig. 1), consists of the usual part found in all reeds A, B, C, D; above this is a vacant space A, B, E, F; the wires in

the reed are soldered together except at the dents that are to hold the bead threads; the wires at these last named dents are extended and spread out as shown at m, n; in this way the bead threads can be raised out of the dents and be carried into this vacant space.

Directly in front of each open dent, at a distance slightly greater than the thickness of a bead, are placed two wires, a b c, soldered to the upper part of the reed at A, and forming a supplementary dent; these wires are bent in the form shown in the sectional drawing, Fig. 2, and serve both as a check to hold the beads and as a guide for the bead thread when they are raised into the open space in the reed. The bobbins (Q, Q) on which the bead threads are wound are elevated so that the beads will slide down to the reed even. The threads

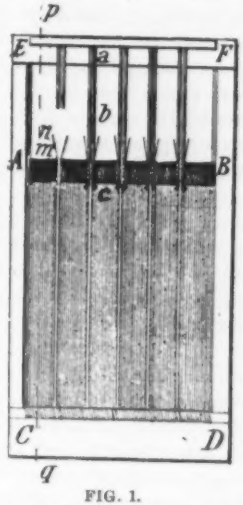
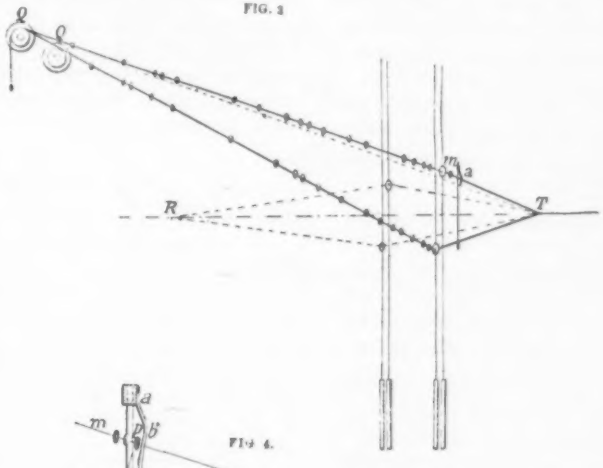


FIG. 1.

FIG. 2.

beads in the fabric, these bead threads are operated the same as the other warp threads and do not rise

FIG. 3



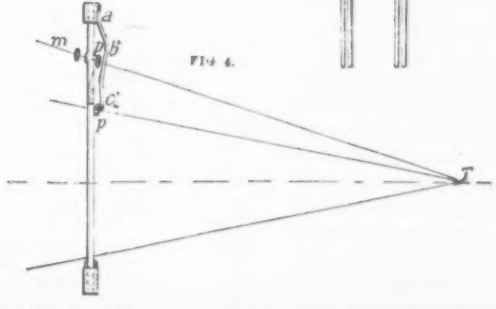


FIG. 4.

are raised by the harnesses to the highest position in the reed.

When it is not desired to place into the open space of the reed. When, however, a bead is to be introduced into the cloth, a special me-

chanism raises the harnesses carrying the bead threads into the open space, as shown at Fig. 4; this represents a bead on the thread, m T, which has slipped through the open space of the reed and is held by the wires, a b c. When the thread, m T, is lowered, the bead, p, is brought in front of the reed, and the forward movement of the lay carries it past a b c along the thread to the cloth.

The wire a b c is adjusted so that only one bead can pass at a time, and for this reason this portion of the mechanism is called the "counter."

Silk Fabrics and Their Manufacture.

BY LUDWIG BRAUN.

There is no doubt that the American silk manufacturers have in the last years met with a very large amount of success; but it is none the less certain that they have not succeeded in producing the heavier qualities for the finer trade. Up to the present time they have manufactured the lighter fabrics or so-called "staple" qualities. We can see no reason why they should not be able to turn out the better qualities as well as the European houses. We are of the opinion that if the American manufacturers could offer their customers domestic goods of the higher grades, they would succeed in setting the American silk trade on a sounder and more profitable basis. These lines are intended as a slight contribution to this proposal.

We shall start with some good qualities for ladies' dresses and trimmings, treating their manufacture and cost in Europe. First an article called Satin-Luxor, Radzimir or Peau-de-soie: we get a good style by putting the warp in a 65 reed, 6s. As organzin it is best to use a good material from Milan in a size of 21/22 Den, weighted 50 to 60 per cent. for black. It is not advantageous to set this quality into a 78 reed, 5s, because an all silk quality is easiest woven and guarantees good working when a coarser reed is used.

For the weft, we take a good quality of Japan tram in a size of 36/40 den., with 75 picks to an inch, shot in 2-fold. The tram should not be weighted over 110-120 per cent., although it is dyed souple. The interlacing of the warp threads being very tight, and the pegging plan being of a 4 shafted twill, we must employ a fast thrown material such as 40-42 turns per French inch.

As to the weft, it must be thrown three-fold, in order to get a very even thread. Great attention must be paid to the weighting of warp and weft. Unfortunately it has lately become the custom to overweight the raw silk to such an extent that the silk fabric tears in a short time; there is, however, a movement now emanating from France to employ a very low degree of weighting and so ensure greater durability. We are convinced that this movement is for the great advantage of the silk trade of both hemispheres.

For a length of 85 yards, 1,800 Kil. warp,		41	Mark	per Kil.		Marks 73.80
Dyeing warp,	"	6.50	"	"		" = 11.70
Winding,	"	2.50	"	"		" = 4.50
Warping,	"	.25	"	"	1,000 Ends	" = 1.82
Weft; Japan Jeans, 40 Den. 1 300 Kil.		38	"	"	Kil.	" 49.40
Dyeing Weft,	"	12	"	"		" 15.60
Winding,	"	2	"	"		" 2.60
Weaving 85 yards,	"	.25	"	"		" 21.25
Expenses 50% weaving cost, (power looms)						" 10.63
						" 191.30
Machinery 5%						" 9.58
81 woven yards M. 2.48 ($ .59) per yard						" 200 88

Calculation of cost in Europe for this quality of cloth: Finished width, 21 in.; woven width, 21½ in.; 8220 ends.

This is the estimated mill cost in Europe. It is calculated for power looms and therefore the percentage of 50 added to the cost of weaving will vary according to the size of the mill. In the above percentage we have taken 50 per cent. for a mill of 100 power

looms. In this 50 per cent. is included charges for depreciation, salaries for superintendent, clerks and weaving master, besides expenses for the preliminary work, such as drafting and warping.

The 5 per cent. added to the gross sum is calculated for wearing out of the healds and reed, and for folding the pieces. It is unnecessary to calculate cost of finishing, since all silk fabrics should never be finished. When the warp is cleaned during the warping, we must add to the cost for warping 25 pf. per 1000 threads. Notwithstanding that we have decided on a warp of 85 yards, at least only divided by 81; because a weave like radzimirs will shrink about 5 per cent.

There are various causes which have prevented American manufacturers from producing as good a fabric as the Europeans. For silk weaving, even of plain cloths, it is very important that looms properly adapted for their work should be employed. Usually the very lightest class of loom is used for silk fabrics; people think that because the silk yarn is finer than any other yarn, that it is therefore advisable to employ a light loom, but this idea is not always correct.

Especially for the heavier qualities of dress goods, we should use a stronger build of loom. It is best to use the so-called "Lyons" looms. If these are not to hand, we should at any rate employ a Lyons lathe, which is very heavy.

We now pass to another quality, called "Satin de Lyon." This is a fabric with two faces; the right side having somewhat the appearance of satin, but duller; the reverse side looks like fine-ribbed Faille. The pegging plan is a three shaft twill called "croise"; in order to insure a good weaving, not less than twelve shafts should be used.

In this class of fabrics a useful article is manufactured as follows: warp about 415 ends to an inch, 70 reed, 6s. For organzin use a good material from Turin or Tapan 21/23 denims, 60/70 per cent. weighted; width in finished cloth, 21 inches; width in the reed, 22 inches; total, 9050 ends. As to the weft we take a good Japan dram 26/28 den., 3-fold thrown, with 62 picks per inch.

Estimate of mill cost:—

The raw silk for the warp can be weighted a little higher than in the first example. The interlacing of the warp threads being not so tight, it is best to choose a good Japan material which, as experience proves, can be weighted best. In the weighting of weft, we must go a little lower, because the size of the weft is finer now than formerly; it is not advisable to go over 80 to 100 per cent. in order to ensure of a good weaving of the fabric.

To a length of 85 yards, 2 Kilo; Raw Silk @ 42 M.	M.	84.
Cost of dyeing for warp 7M per kilo.	"	14 0
Cost of winding 2M 50 kilo.	"	5.0
Cost of warping per 1,000 threads, 25 pf.	"	2.26
We have weft. 7.15 Kilo at 39 M. per Kilo.	"	44 85
Cost of dyeing M 10.50 per Kilo.	"	12.08
Cost of winding 2.50 M. per Kilo.	"	2.90
Cost of weaving 85 yards @ 22 pf., M 18.70		
50% expenses (power looms) M 9.35		
	"	29.05
	M.	193.14
5% for machinery		9.70
83 Woven Yds. M. 2.44 ($ .58) per yard,	"	202.84

—A material for oiling wool has been patented in France, and is made by the addition of 5 per cent. of ammonia or either volatile alkali combined with about 10 per cent. of gelatine. The patentee states that the gelatine is used for the purpose of preventing the evaporation of the ammonia, and that goods made from stock oiled with this composition can be much more readily scoured.

—The life that we find too short is composed of many days that we find too long.—Octave Feuillet.

POWER DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

Transmission of Power.

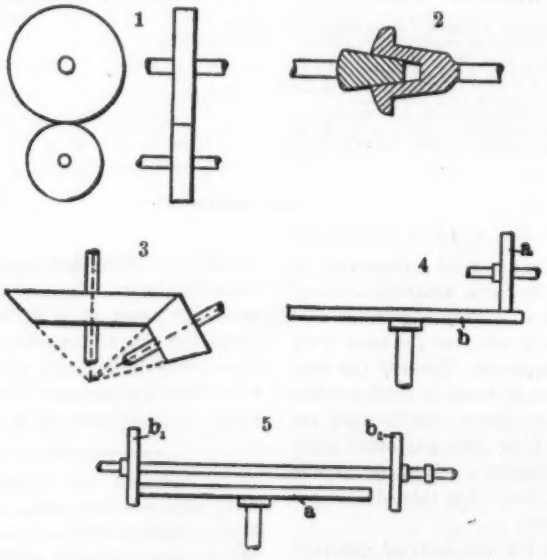
By the various methods of transmitting power already described an intermediate in the shape of a rope or belt is employed. The transmission of power is effected directly from one pulley to the other by means of friction pulleys, and as the name indicates, this is effected by friction which is created by pressing the surface of the pulleys together.

The amount of power that can be transmitted depends upon the pressure and the frictional co-efficient. The amount of pressure required is calculated by dividing the power, (p), by the frictional co-efficient. This last named factor depends upon the material from which the pulley is made; for iron with iron is 2/10; for wood with iron, 25/100; wood with wood, 5/10; iron with leather, ¼.

The simplest arrangement of friction pulleys is where the shafts are parallel with each other, and the friction pulleys can be of cylindrical form as shown at No. 1, or cone shaped as shown at No. 2. The last one has the advantage over the former, in that much greater power is transmitted in proportion to the pressure applied.

If the shafts are at an angle with each other as shown at No. 3, the profile of the pulleys may be cone shaped.

No. 4 shows an arrangement by which the speed of the driven pulley, (b), can be changed by altering the position of the driver, (a). The nearer the pulley, (a), is to the centre of the pulley, (b), the faster the latter will move.



By the arrangement shown at No. 5 the direction in which the driven pulley, (a), revolves can be quickly changed by moving the driving shaft so as to bring either the driver, (b^1), or (b^2), in contact with (a). Such an

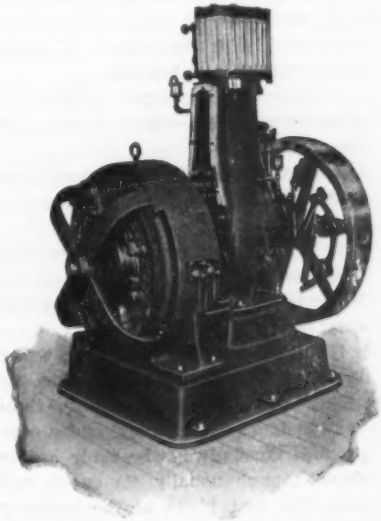
arrangement is very convenient for operating presses, as the direction of the screw shaft to which the pulley, (a), is attached can be easily changed, and the press plate raised or lowered accordingly.

The use of such friction pulleys finds but a subordinate place in power transmission as compared with rope and belt drives; they are employed for only small quantities of power.

Gears are extensively used for transmitting power directly from one shaft to the other, such as the spur gears when the shafts are parallel to each other, and bevelled gears varying according to the inclination of the shafts. Speed of the pulley driven either by gears or friction pulleys is calculated in the same way as when driven by belts or ropes.—Uhland's Technische Rundschau.

A Compact Direct-Connected Generating Set.

Economy of steam consumption is, of course, a most vital consideration in the performance of an engine, for upon that depends the coal bill. It often happens, in addition, that installation conditions demand economy of floor space.



The accompanying illustration shows a type of engine fulfilling both these requirements in the highest degree. It is a standard upright Class "A" engine manufactured by the Buffalo Forge Company, of Buffalo, N. Y., and in this case is connected to a generator of the Triumph Electric Company's make, though any standard dynamo may be so attached.

The rigid cast-iron frame of the upright enclosed type has one cylinder head cast with the frame, and to this is bolted the cylinder and steam chest, though in the smaller sizes the cylinder also is cast on the frame. Cylinder and guides are bored with the same setting of the boring bar, so that perfect alignment is secured. The builders state that the material employed throughout is the very best attainable, while the workmanship is of an equally high grade.

A unique feature of this upright engine is that it is enclosed to run in oil, so that perfect lubrication of the main bearings, crank-pin, wrist-pin, and guides is assured. Other bearing surfaces are cared for by continuous oilers of large capacity, and for the cylinder and steam chest, a large sight feed lubricator is provided. As a result of this thorough system, smooth running at continuous high speed is possible. Detachable side plates give an oil and dust proof enclosure and at the same time permit of ready access to the moving parts.

Another feature which renders this engine valuable for high speed lighting and power service is close regulation. This is afforded by a centrifugal fly-wheel governor of great sensitiveness. The latter property follows in part from the careful design, which provides three means of adjustment for the governor, and in part, also, from the provision of ample lubrication for all the governor pins and rubbing surfaces of the valve motion. The valve is of the piston type, well balanced.

From the illustration herewith shown, it is easily seen that an extremely small floor space is required for such a generating set. This feature has resulted in the extensive ap-

plication of this engine to marine service, where the requirements are especially severe. The machine is built in sizes ranging from 4 to 100 horsepower.

The Exhibit of the American Blower Company at the Pan-American Exposition.

In Block No. 26 of Machinery Hall, Buffalo Exposition, is this exhibit of heaters, fans, engines, blowers, dry-kilns, trucks, and other kindred machinery, which is quite interesting and well worth the time necessary to inspect it to any one who has use for such machinery.

The booth this company has put up is one of the handsomest in the building. The general scheme is rendered in ivory white and deep green. This feature is some 20 feet in height, being topped by a gable-end resting on some very prominent columns. Above this is a large painting nearly 60 feet in height, designed to be emblematical of the American Blower.

The company has another feature, which attracts a great deal of attention, being a model of their widely known and very successful "Moist-Air" Dry Kiln. This model has a glass side, enabling the spectator to see the exact operation of the kiln.

They have a large 140 inch steel plate fan running, being driven by an 8 by 8 marine type vertical engine, coupled direct to the fan shaft. From the discharge of this fan, which points upward, they have myriads of yellow and blue ribbons streaming up into the air. These are the college colors of the University of Michigan, and no Michigan College graduate goes by without noticing it, it likewise always attracts a great deal of attention from the ladies. In the wall back of the exhibit they have fitted a 108 inch disc fan, which is about as large as one commonly sees in such a place. It is however, by no means the largest they build.

They are exhibiting a Moorehead automatic return steam trap in operation, which clearly shows how the trap drains condensation water from heating surfaces and delivers it direct to the boiler.

There is a large pressure blower mounted on a Z iron base, on the other end of which is the vertical automatic high-speed engine for driving same.

They are also showing a horizontal, automatic high-speed engine and a vertical low-pressure engine, as well as their widely known A, B, C exhaust fans, the adjustable features of which have been so frequently enlarged upon that further mention is hardly necessary here.

The exhibit is well worth the investigation of any one and we can assure them that all will be welcome to make it their headquarters.

Boiler Economy.

There may be several different bases for boiler economy, according to the particular feature held in especial prominence. The output of the boiler is estimated in terms of the steam produced, and we may have the following kinds of economy:

1. Economy in coal consumption, increasing with the output of steam per pound of coal burned.

2. Economy in weight of boiler, increasing with the output of steam per pound of boiler.

3. Economy in first cost, increasing with the output of steam per pound invested in the boilers.

4. Economy of maintenance or total life, increasing as the life of the boiler is longer and the amount necessary for repairs is smaller.

It is never possible, says a writer in a contemporary, to fulfil in the highest degree the conditions for these various kinds of economy, and a compromise must always be made among them, though usually (1) or (2) will take the first place in the order of importance.

Without special note, however, the term economy is understood to refer to (1), though the considerations relating to the others should always be kept in mind. In some cases (2) may

assume first place in the order of importance, and perhaps require some sacrifice relative to the others. We will now consider more especially the economy referred to under (1).

From the standpoint of coal economy of efficiency, the boiler is charged with all the coal that is thrown through the furnace doors, and is credited with the steam which it sends to the engine. Or, to state the matter more definitely, it is charged with all the heat which could be got from this coal by perfect and complete combustion, and is credited with the heat which is transferred through and actually used in the formation of steam.

If the efficiency were perfect, or if there were no loss, these two amounts of heat would be equal. Actually there are many losses, large and small, and in consequence the latter is considerably less than the former. The ratio of the two is known as the boiler efficiency. In practice its value varies from 50 to 75 or 80 per cent. Below are the more important sources of loss which occasion this drop in efficiency.

In the first place, a little of the fuel may fall unburned through the grate into the ashpit. Again, a little in the form of dust and small bits may be carried by a strong draught, either unburnt or only partially burnt, through into the tubes, uptakes, or flue. Still another small portion may escape as smoke, which consists almost entirely of very fine particles of unburnt carbon formed from the gases which are distilled away from the coal in the process of combustion. Still another portion of these gases may escape unchanged and unconsumed.

Again, there may be an incomplete combustion of the carbon, forming carbon monoxide, and giving only 4450 heat units per pound, instead of 14,500 which result from complete combustion into carbon dioxide. Hence, whatever carbon escapes in the form of carbon monoxide is only partly burned, and may be considered as carrying away over two-thirds of the heat which would be liberated by complete combustion. These losses all occur in the furnace, and are due to poor firing and to imperfect combustion.

To reduce them to the lowest limit, the fireman must know his business, and be willing to attend to it with ceaseless care and diligence. In addition, there must be provided, by proper design, the necessary supply of air both above and below the grate, together with such arangements as experience may show are needed for good combustion with the fuel in hand. At best this loss may be reduced to perhaps 2 or 3 per cent., while with carelessness or poor design, or both, it may easily reach values from 10 to 20 per cent.

The heat being thus more or less perfectly liberated in the furnace, is then passed on to the boiler heating surface, whose duty it is to transfer it through into the water on the other side. The energy is still to exist as heat, but it is to be transferred from the hot gas to the water, thus converting the latter into steam. This, however, cannot be perfectly accomplished, and thus arises a further loss.

A part of the heat, instead of passing through the heating surface, goes up the flue carried by the escaping gases, and so gets away into the outside air. Another and smaller part escapes by radiation into the fire room. These losses it is impossible wholly to avoid. It would be necessary to avoid all loss of heat by radiation, and to reduce the temperature of the products of combustion in the flue to that of the outside air. The latter, especially, cannot be done, for the best of reasons. It the first place, the temperature cannot be reduced below that of the steam and water in the boiler, because heat always flows naturally from a hot body to a cooler one, and it will therefore flow from the gas to the water only so long as the latter is the cooler of the two.

The actual temperature of the escaping gases must be considerably

higher than that of the steam, because in the first place sufficient heating surface to reduce them to nearly the same temperature could hardly be allowed; and, again, aside from blowers, the strength of draught is dependent on the temperature of the hot gas in the flue, and for a satisfactory rate of combustion it is necessary to discharge the products of combustion at temperatures of not less than from 500 to 600°. The loss is one, therefore, which exists in the nature of things, and cannot be reduced below some 20 or 30 per cent.

On the whole, then, the entire losses under the best conditions can hardly be reduced much below 25 per cent., while with poor conditions they may aggregate from 40 to 50 per cent. The remaining fraction, or the 50 to 75 or 80 per cent., represents, then, the efficiency of the boiler as defined above.

Since a pound of average good coal has available from 13,000 to 14,000 heat units, it follows that the heat actually utilized per pound of coal is usually found between, say, 7000 and 11,000 units.

In general the conditions favorable to high efficiency are the following:

1. A free-burning coal of good quality, with suitable furnaces and air supply for complete combustion.
2. Moderate draught.
3. Abundant heating surface.

Or, as a combination of (2) and (3) we may put:

2. Moderate evaporation required per square foot of heating surface.

The opposite of these conditions will cause necessarily a loss in efficiency more or less pronounced according to circumstances.

Evaporation per Pound of Coal.—The efficiency of a boiler is often roughly estimated by the number of pounds of water evaporated into steam per pound of coal burned on the grates. This, according to conditions, may vary from six or seven to perhaps eleven. Remembering that it usually requires rather more than 1000 heat units per pound of steam, the general agreement between these figures and those above for the heat utilized per pound of coal is readily seen. In fact, the figures for the heat utilized are derived really from a measurement of the pounds of steam evaporated per pound of coal, together with a knowledge of the heat required per pound of steam, the latter being derived, of course, from the conditions of the evaporation.

When we remember the great difference in the amount of heat required per pound of steam, depending on the temperature of the feed, the temperature of the steam, and whether the steam is moist or dry, it is clear that for any fair measure of boiler performance in terms of steam formed per pound of coal, these differences must be allowed for, especially in comparisons between boilers working under different conditions.

To this end it is customary to reduce the number of pounds evaporated to what it would be if the steam were dry and the temperature of both feed and steam were 212°. In such cases it would require to make 1 lb. of steam simply the latent heat at 212°, or 996 B. T. U. (British thermal units).

This is known as the reduced evaporation or the equivalent evaporation from and at 212 degrees. It is really the number of pounds of steam which would be formed if each required 966 B. T. U., and is therefore simply a measure of the B. T. U. put into the steam per pound of coal.

The ratio between the number of B. T. U. actually required and the 996 is known as the factor of evaporation. These factors are often aranged in tabular form, assuming dry steam in each case, but with temperature of feed water and steam varying over the usual range.

—To live in peace with men it is necessary to overlook many inequalities of character.—Montesquieu.

—Those who complain of fortune often have only themselves to blame. —Voltaire.

DYEING DEPARTMENT

Dye Recipes for September.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $4.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

Recipe No. 129.

Black on Worsted Yarn.

Alpha Black 6 B S on 100 lbs. worsted yarn.

Prepare the dye bath with

5 lbs. Alpha Black 6 B S.

10 lbs. Glauber's Salt.

(United Indigo and Chem. Co., 176 Federal St., Boston.)

5 lbs. Acetic Acid.

Enter at 180° F., bring to a boil and dye at a boiling temperature for one hour.

Alpha Black 6 B S produces an excellent shade of bluish black, possessing excellent fastness.

Recipe No. 130.

Yellow on Worsted Yarn.

Milling Yellow No. 55 on 100 lbs. of worsted yarn.

Prepare dye bath with

2½ lbs. Milling Yellow No. 55.

(Sykes & Street, 85 Water St., New York.)

3 lbs. Sulphuric Acid

15 lbs. Glauber's Salt.

Enter at 160° F., bring to a boil and dye at that temperature for one hour.

Milling Yellow No. 55 produces a full and brilliant shade of golden yellow, and is a fast milling color.

Recipe No. 131.

Heliotrope on Cotton Cloth.

Rhoduline Heliotrope 3 B on 100 lbs. cotton cloth.

Prepare with

4 lbs. Tannic Acid.

2 lbs. Tartar Emetic.

Finish

4 lbs. Heliotrope 3 B.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

Rhoduline Heliotrope 3 B is possessed of exactly the same valuable properties as the older B brand, it only being bluer in shade. They are adapted for employment in all branches of printing.

Recipe No. 132.

Green on Worsted Yarn.

Criterion Green on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Criterion Green.

(F. E. Atteaux & Co., 176 Purchase St., Boston.)

15 lbs. Glauber's Salt.

5 lbs. Sulphuric Acid.

Enter the yarn at 170°, bring to a boil and dye at a boiling temperature for one hour.

Criterion Green produces a very brilliant shade of green which is fast to exposure and milling.

Recipe No. 133.

Bluish Pink on Cotton Yarn.

Diphenyl Red 8 B on 100 lbs. cotton.

Prepare the dye bath with

¼ lb. Diphenyl Red 8 B.

(John J. Keller & Co., 104-106 Murray St., New York.)

20 lbs. Common Salt.

Enter yarn at 180° F., bring to a boil and dye at a boiling temperature for one hour.

Diphenyl Red 8 B produces a very blue shade of pink, and its fastness is

about the same as similar colors. The shade does not change by acid or heat, and is highly recommended for union goods as it dyes cotton and wool alike. In a standing bath the first quantity used can be reduced about one-half.

Recipe No. 134.

Dark Green on Cotton Yarn.

Imperial Green on 100 lbs. of cotton yarn.

Prepare the dye bath with

3 lbs. Imperial Green.

(O. S. Janney & Co., 8-10 Letitia St., Philadelphia, Pa.)

20 lbs. Common Salt.

Enter the yarn at 180° F. (or even at a boil), and dye at a boiling temperature for one hour.

Imperial Green produces a full and rich shade of green, and one of great fastness to light, washing and scouring. The bath does not exhaust and subsequent lots require about one-third less dyestuff to produce the same shade.

This color is well adapted for use in upholstery work, ginghams, domets and every class of cotton work that requires a rich and fast green.

Recipe No. 135.

Blue on Cotton Cloth.

Rhoduline Blue R on 100 lbs. cotton cloth.

Prepare with

4 lbs. Tannic Acid.

2 lbs. Tartar Emetic.

finish with

3 lbs. Rhoduline Blue R.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

Rhoduline Blue R produces a bright blue shade of a reddish hue, remarkable for its good resistance to light, alkalies, washing and acids.

Recipe No. 136.

Reddish Brown on Worsted Yarn.

Milling Brown Y on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Milling Brown Y.

(Sykes & Street, 85 Water St., New York.)

15 lbs. Glauber's Salt.

4 lbs. Sulphuric Acid.

Enter the yarn at 180°, bring to a boil and dye at a boiling temperature for one hour.

Milling Brown Y produces a full shade of reddish brown, and is a fast milling color.

Recipe No. 137.

Dark Green on Cotton Yarn.

Compound shade on cotton yarn.

Prepare the dye bath with

1 lb Diphenyl Fast Yellow G G.

2 lbs. Diphenyl Dark Blue K.

(John J. Keller & Co., 104-106 Murray St., New York.)

20 lbs. Common Salt.

Enter at 170° F., bring to a boil and dye at a boiling temperature for one hour.

The above produce a very dark shade of green which possesses very good fastness.

Recipe No. 138.

Black on Worsted Yarn.

Acid Black 2 G on 100 lbs. of worsted yarn.

Prepare the dye bath with

8 lbs. Acid Black 2 G.

(Read, Holliday & Sons, Ltd., 7 Platt St., New York.)

10 lbs. Glauber's Salt.

4 lbs. Sulphuric Acid.

Enter the yarn at 180° F., bring to a boil and dye at a boiling temperature for one hour.

Acid Black 2 G is a very level dyeing color and produces a good shade of black.

Recipe No. 139.

Orange on Cotton Yarn.

Oregon Orange Y on 100 lbs. worsted yarn.

Prepare the dye bath with

2 lbs. Oregon Orange Y.

(W. A. Ross & Bros., 11 William St., New York.)

20 lbs. Common Salt.

Enter the yarn at 170° F., bring to a boil and dye at a boiling temperature for one hour.

Oregon Orange Y has a high coloring power, produces a brilliant shade

of orange, and possesses all the characteristics of the direct cotton colors.

Recipe No. 140.

Black on Cotton Yarn.

Immedial Black N G on 100 lbs. cotton yarn.

Prepare the dye bath with

22 lbs. Immedial Black N G.

(Wm. J. Matheson & Co., Ltd., 182 Front St., New York.)

10 lbs. Soda Ash.

10 lbs. Sodium Sulphide.

80 lbs. Common Salt.

Enter the yarn at 170° F., bring to a boil and dye at this temperature for an hour keeping the yarn under the surface of the dye liquor.

Full directions for accomplishing this may be found in W. J. Matheson's publication on the dyeing of Immedial Black and Immedial Blue.

When the dyeing is completed the yarn is after-treated for one-half hour at 170° F., in a bath made up with

3 lbs. Potassium Di Chromate.

3 lbs. Acetic Acid.

Immedial Black N G will be found an excellent black, and its fastness to washing, light, acids and milling is remarkable.

Recipe No. 141.

Black on Worsted Yarn.

Buffalo Black 8 B on 100 lbs. of worsted yarn.

Prepare the dye bath with

5 lbs. Buffalo Black 8 B.

(Schoellkopf, Hartford & Hanna Co., 100 William St., New York.)

15 lbs. Glauber's Salt.

4 lbs. Acetic Acid.

Enter yarn at 180°, bring slowly to a boil and dye at a boiling temperature. The addition of a little acid orange to the dye bath will improve the resulting shade remarkably.

Buffalo Black has a special advantage in that it leaves the cotton a very good white in the dyeing of cotton and wool mixed goods.

Recipe No. 142.

Lilac on Cotton Yarn.

Direct Lilac on 100 lbs. cotton yarn.

Prepare the dye bath with

1 lb. Direct Lilac.

(O. S. Janney & Co., 8-10 Letitia St., Philadelphia, Pa.)

20 lbs. Common Salt.

Enter the yarn at 160° F., raise to a boil and dye at a boiling temperature for one hour.

Direct Lilac produces shades of excellent fastness and brilliancy. The bath does not exhaust and further lots require about one-third less dyestuff to produce same shade.

The shade can be brightened by the addition of a little acetic acid to the bath.

This color works very well on hosiery, dyeing evenly and thoroughly penetrating the knit fabric.

Recipe No. 143.

Green on Worsted Yarn.

Fulling Green T on 100 lbs. of worsted yarn.

Prepare the dye bath with

3½ lbs. Fulling Green T.

(A. Klipstein & Co., 122 Pearl St., New York.)

20 lbs. Glauber's Salt.

2 lbs. Acetic Acid.

Enter the yarn at 100° F., bring to a boil and dye at a boiling temperature for one hour.

Fulling Green T gives a shade of green which possesses remarkable fastness.

Recipe No. 144.

Red on Worsted Yarn.

Brilliant Bordeaux S on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Brilliant Bordeaux S.

(Berlin Aniline Works, 72 Front St., New York.)

10 lbs. Glauber's Salt.

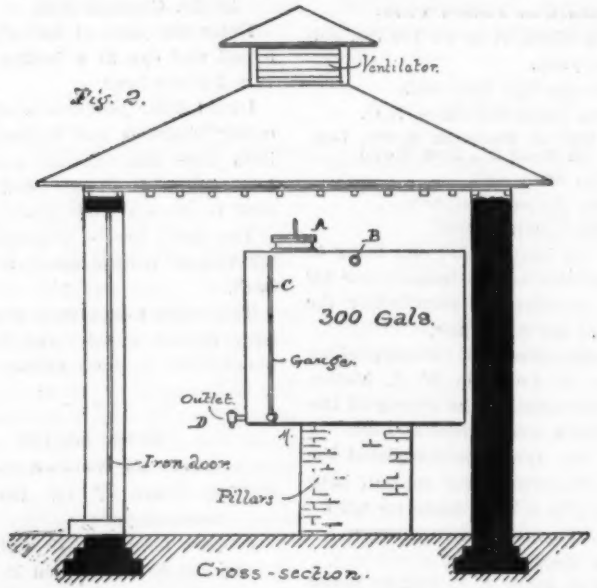
4 lbs. Sulphuric Acid.

Enter the yarn at 180° F., bring to a boil and dye at a boiling temperature for one hour.

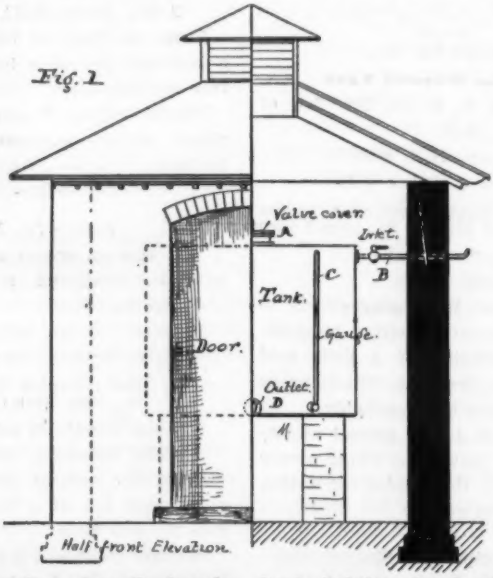
Brilliant Bordeaux S produces a very brilliant shade of red, of good fastness.

Storing Benzine.

The accompanying sketch represents a magazine for 300 gallons, or approximately 6 barrels of benzine.



The chief considerations aimed at are; (1), safety from fire; (2), loss by evaporation; (3), loss by leakage.



The storage vessel is a plate iron tank, 4 feet in diameter, 3 ft. 3 ins. deep, provided with four openings, as follows; a 6 in. hole at A, provided with a loosely fitting cover to serve as a safety-cap; an inlet B, for filling the tank, provided with a cock to be kept tightly closed after filling; a gauge at C to indicate the quantity of benzine in the tank at any time, and

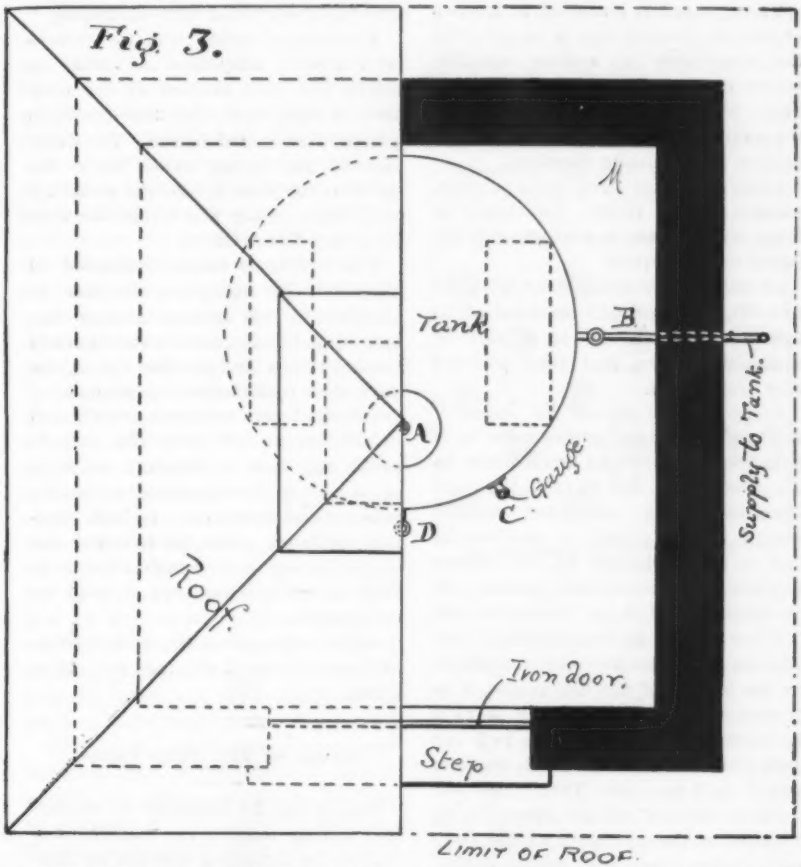
an outlet at D, provided with a keyed faucet.

The general construction may be readily seen on the plans; brick or stone is preferable to any other material, and there should be only one door in the building.

When any quantity of benzine is to be stored for use in industrial works, access to the tanks should be allowed only to one man who should be held responsible for the care of the building and contents.

The present plans provide for a double ventilated roof, which, in case of fire, will be consumed, but the fire will be contained wholly within the four walls. The building should of course be located at a safe distance from other structures.

BETA-NAPHTHOL.



Direct Dyeing with the Sulphur Colors.

According to a process recently patented in France the sulphur colors are used without mordanting the material, as follows: 13 lbs. of sulphur black or blue is dissolved in warm water and added to a bath of from 25 to 250 gallons water together with 13 to 20 gallons 13° hydrosulphite of soda. This bath is heated to 50° C. and acquires a brownish shade. The goods are wet out and extracted before coloring. When a mixed bath is used, the reduced solution of sulphur black or blue is added to an indigo vat and hydrosulphite used to effect a complete reduction of the dye. An addition of salt to this bath increases the depth of the shade. Various shades can be obtained by the use of alizarine colors in the bath.

Coloring Cotton in a Cold Bath.

The process of dyeing cotton in a cold bath is of especial interest to dyers and manufacturers, owing to the important part which the cost of steam plays in the cost of dyeing.

Immedial Black and Blue, which have been extensively adopted by dyers of cotton piece goods and yarns, can also be used in a cold bath.

The dyestuff is dissolved in wooden or earthen vessels and is mixed with the quantities of sodium sulphide stated in the recipes mentioned hereafter; boiling hot water poured over the mixture, which is then well stirred until it is completely dissolved.

Piece goods are dyed in an earthen, wooden or iron vessel. No copper or brass should come in contact with the goods or dye liquor.

As soon as the goods come from the dye vat, they are well squeezed off at full width by means of a pair of squeezing rollers, and then at once very well rinsed.

In dyeing the brands FF extra, V extra and G extra, prepare the bath with about 20 times as much water as the goods weigh and 20 to 25 per cent. Immedial Black calculated on the weight of the goods, in addition to (per 10 gallons liquor) 9½ oz. sodium sulphide, 21 oz. dextrine (yellow), 24 oz. common salt, 8 oz. Turkey red oil.

When dyeing in the standing bath add for each subsequent lot (calculated on the weight of the dry goods), 9 to 11 per cent. Immedial Black, 3 to 4 per cent. sodium sulphide, 1 to 2 per cent. dextrine, 1 to 2 per cent. common salt, 1 to 2 per cent. Turkey red oil.

The goods are left for about 1½ to 2 hours in the dye bath at the ordinary temperature and turned during this time only two or three times.

Care should be taken to keep goods well covered with the dye liquor when not being turned. The goods are next squeezed, rinsed and after-treated.

This after treatment may be done at ordinary temperature. For blue blacks 3 per cent. bichrome and 3 per cent. acetic acid is used for full shades, 2 per cent. chrome alum, 2 per cent. bichrome and 3 per cent. acetic acid.

Some brands of these dyes do not require this after treatment, although it improves the shade. The goods are left in this bath ¾ to 1 hour, turned two or three times in the meanwhile, and then washed. To the last rinsing bath 3 to 5 ounces acetate of soda per 10 galls. of liquor is added and the goods dried without rinsing.

Previous to dyeing yarn the yarn is well wetted, suspended as usual on sticks and then entered at the ordinary temperature into the dye bath prepared as stated before. The duration of the dyeing operation is the same as for piece goods, viz, about 1½ to 2 hours, during which time the yarn is turned 5 or 6 times.

The dyeing is either conducted on bent sticks or iron pipes, the yarn remaining in this manner always covered by the liquor, or on straight sticks placed slantwise into the liquor, the yarn thus being below the surface.

The dyed yarn is either quickly and evenly wrung off over the vat, to avoid any loss of dyestuff, or it is squeezed off by means of squeezing rollers fixed on the vat. In both cases this operation must be followed immediately by a thorough rinsing in fresh water in a vat kept at hand for this purpose.

After rinsing the yarn is after-treated exactly as indicated for piece goods.

Scroop on Mercerized Cotton.

Scroop can be imparted to mercerized silk by passing the material several times through a solution of Marseilles soap and acetic or tartaric acid. The goods are not rinsed but simply extracted and dryed so that the acid evaporates from the fibre. The greater the evaporation of acid, the more durable is the scroop or rustle of the goods. The strength of the bath for any particular case can be determined best by experiment.

Recently boracic acid has been recommended for this purpose. The bleached and mercerized cotton is treated in a bath containing Marseilles soap and boracic acid. From 16 to 20 lbs. boracic acid is used for 100 lbs. cotton. It is claimed that this process does not affect even the colors that are especially sensitive to acids, such as Congo Red.

A Process for Ornamenting Fabrics.

A design for decorating fabrics by a new process is shown in the accompanying illustration. A plain white printed or colored fabric may be used.

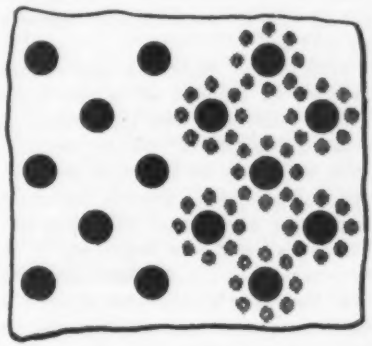
Where it is desired to ornament or produce an added ornamental effect upon a fabric already partly treated or ornamented, as by dyeing or printing, the fabric is taken, say a plain colored fabric or one having any kind of printed figures, lines, dots, etc., and other additional lines, dots, forms, or figures are printed, as, for instance, the small dots surrounding the polka-dots in the illustration, making use of a printing fluid which is of such a character as to deposit upon the fabric a film insoluble in water.

The patentee states that he has found that fluids having celluloid as a basis are preferable to others and attended with advantages. Thus a solution of ten per cent. of celluloid in acetate of amyl makes an excellent printing fluid, or a saturated solution may be made and then diluted with alcohol, ethyl, methyl, etc.

While various different solutions and solvents may be employed, it is economical to make a saturated solution of celluloid in amyl acetate and this strong solution can then be rendered diluted by coal-oil or liquid coal-oil products, as kerosene or naphtha; this can be effected without causing any turbidity or precipitation in the mixture.

The kerosene or its equivalent is miscible with alcohol when acetate of amyl is present in the proportion of at least fifty per cent. The solution thus produced has the advantage of not being very inflammable. This fluid, which is practically transparent, may be used like any other fluid or "color" in printing, being applied to blocks, plates, or cylinders and transferred to the fabrics in the ordinary manner. Thus in the case of, say, black fabrics, the printing fluid may be printed as water-lines upon the surface of the fabric, imparting to a cotton fabric the appearance of a watered silk, or a satin-like finish may be imparted by printing over the entire surface of the fabric.

Where the fabric already has figures or forms produced by dyeing, printing, or otherwise, the fluid may be deposited in auxiliary forms, dots, waved



lines, or upon the entire surface, producing in any case a lustrous effect not otherwise obtainable.

In some cases it is advantageous to impart greater body, opacity, or a color to the printing fluid, and this may be done by adding a suitable color or pigment. Thus zinc-white (preferably ground up with alcohol, kerosene, or other liquid miscible without separation with the celluloid solution) may be added to the said solution, or for a yellow color, Auramine G; for pink, Rhodamine 6 G; or for blue, Brilliant Cyanine, Blue; but other materials may be used. Where the fabric to be ornamented has not already been dyed or printed, the desired ornamentation may be effected by the use of

the colored printing fluid, printing the same in lines, stripes, dots, or other forms, as required.

A fine effect, which is termed a "fish-scale" effect, may be secured by adding sufficient pigment to secure only a partially transparent or translucent mixture, so that the figures printed on the fabric, especially if already colored, are not so solid or coarse as they would be if printed from an obsolutely opaque solution.

The goods are complete on the evaporation of the volatile part of the printing fluid; but if the goods are calendered, a high enamel-like finish and very lustrous effect is secured, which is peculiar and most desirable in many classes of goods. The film thus applied to a fabric will secure a permanently ornamental effect, as it is not affected by moisture and improves by friction.

Animal and vegetable oils cannot be used as diluents or in any other way in connection with this process of ornamenting fabrics. On the contrary, such use would be injurious and render it impossible to produce the result in printing attained by the means employed as heretofore described. It is necessary, however, for some purposes that the material shall be of such a character that a lustrous effect will be imparted or increased by calendering, for which reason a celluloid film has special advantages.

A New Method of Rendering Colors Fast to Water.

A method has recently been proposed in France for preventing cotton colored with substantive dyes from becoming spotted when exposed to water. Heretofore these dyes have been very susceptible to the influence of water, and constant efforts have been made to find a preventive. The new method recently patented consists in dissolving 1¼ lbs. of sulphate of alumina in six gallons of hot water; 1¼ lbs. acetate of soda is dissolved in another six gallons of hot water. When cold these solutions are mixed together and diluted by the addition of 25 gals. of cold water. A basic salt is formed which is precipitated in a short time.

The cotton goods which have been dyed with substantive colors are impregnated with this liquor, and are said to become very fast to water. In case the substantive colors are those that are liable to be injured by the sulphate of alumina, the goods are first passed through a 2% solution of sulphate of soda. The patent specifications name a large number of the substantive colors which are rendered fast to water by this process.

Rendering Wool Proof Against the Coloring Action of Dyes.

A process for treating wool so that it will resist the coloring action of the dyeing liquor has been patented in Germany. 220 lbs. of woolen yarn is treated for one hour in a boiling bath of about 800 gals. of water and 55 lbs. of tannin. The yarn is then handled for half an hour at a boil in 800 gals. of water and 33 lbs. of tartar emetic; it is then rinsed in water to which has been added 6½ lbs. of chloride of tin.

It is claimed that yarn so treated will not be colored by the ordinary processes of dyeing. This yarn can be used in connection with yarn not so treated in goods that are to be piece dyed, producing fancy effects in the finished goods.

The Ost. Woll. und Lein. Ind. states that it has been known for years that this treatment would reduce the dye absorbing power of silk, and adds that there is danger of the process injuring the spinning qualities of the wool.

The wool so treated does not remain perfectly white when colored, but the difference between the shade and that of wool not so treated is sufficient to give a contrast that can be utilized in the production of fancy effects.

—Memory is an ingrate; when it teaches us one name it makes us forget another.—d'Houdenot.

Tendering by Oxalic Acid.

As the result of observations made to ascertain the degree of tendering effected by oxalic acid upon the cotton fibre, Scheurer, for a printing color containing 3 oz. of oxalic per gallon, gives the following figures: 4 hours' suspension at 16 to 18 deg. C., tendering 3 per cent.; 72 hours suspension at 16 to 18 deg. C., tendering 7 per cent.; 4 hours in a warm room, tendering 12 per cent.; 72 hours in the same room, tendering 36 per cent.; steaming, tendering 32 per cent. The addition of 5 per cent. glycose to the printing color reduces the two latter figures to 26 and 28 per cent. respectively.

A more energetic protective agent, according to Wehrlin, is glycerine. An addition of glycerine to the color simultaneously increases the solubility of the oxalic acid to a great extent and prevents crystallization and splitting of the fabric during drying. In a well-known Mulhouse works this formula has been in use a long time for certain discharge styles and for large patterns.

Rendering Colors on Wool Fast to Steaming.

Certain of the azo colors on wool undergo a marked change when subjected to the action of steam.

As steaming is indespensable in the finishing of woolen goods, a method of rendering these azo colors proof against the action of steam would be of great value.

The Manufacture Lyonnaise de Matieres Colorantes, in proposing a method for effecting this result, states that the change of shade is due to the transformation of the color from one group of azo dyes to another. For example, azo black turns red at first, by reason of its combination with amidoazoic compound, the presence of which on the fibre can be readily demonstrated.

The Lyons company have conducted a series of experiments based on this assumption, and, state that they have by the use of oxidizing agents, succeeded in counteracting the action of the fibre on the coloring matter.

Only those agents are employed which are not readily modified by the animal fibre before the steaming process. The bichromates and permanganates are not suitable on this account, while the chlorates, such as the salts of copper oxides, are found to answer the purpose perfectly.

The process is very simple, consisting simply in impregnating the goods with the oxidizing salts, and this can be done either in the dye bath or afterwards.

The quantity of oxidizing agent used depends upon the depth of the shade and quality of wool. Following are the average quantities used: 3 per cent. to 4 per cent. sulphate of copper, on weight of goods; 5 per cent. to 8 per cent. chlorate of soda.

When the copper salts are used, the goods can be washed either after dyeing or impregnation with the salts; this is not the case when chlorate of soda is used. Among the colors made fast to steam blowing by this method are mentioned the naphthylamine blacks, blue black naphthyl N and anthracite black.

—During the past few years there has been a remarkable growth in the trade between Japan and China, occasioned for the most part by the opening up of markets for Japanese manufactures in the neighboring Empire. Cotton yarns and cotton cloths are the manufactures of Japan which most readily find purchasers in China. The recent disturbances in China, which almost put a stop for a time to the commercial intercourse of the two countries, was a blow felt in an especial manner by those industries. Imports from China, too, naturally diminished in some cases, though the sum of them was greater than in 1899. The labor market in Japan was also affected by the withdrawal of numbers of coolies for service, not only with the Japanese troops, but also with the forces of more than one foreign nation.

QUESTIONS AND ANSWERS

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Standard Sizes for Hosiery and Underwear.

Editor Textile World:

Can you inform me where I can find a list of the standard sizes for hosiery and underwear?

Size (148).

In the Janury, 1901 issue of the Textile World our correspondent will find such a list of sizes for hosiery and underwear.

Manufacturers of Burlaps.

Editor Textile World:

Please give me the names of several manufacturers of burlaps?

Pent Up (152).

Answered by mail.

A Benzine House.

Editor Textile World:

Please furnish us with a plan for a benzine house.

Color Works (150).

In another part of this issue will be found plans and description of a benzine house, which we have secured in response to this enquiry.

Take-Up in Weaving.

Editor Textile World:

What is the percentage of warp take-up in weaving heavy weight woolen kerseys? There are 4000 ends in the warp, and 50 picks per inch in the filling; goods weigh about twenty-six ounces per 6/4 yard, finished; woven with a broken four-leaf twill, warp dressed one and one, filling solid. Does the take-up vary on different kinds of goods?

Take-Up (151).

The warp take-up on such a fabric as our correspondent describes will be about 7 per cent. The take-up in weaving varies widely with the class of goods and weave employed. On light weights it will go as low as 4 per cent., and on heavy weight beavers woven with a plain weave back and face and with coarse yarn in the filling will reach 13 per cent.

Knitting Mills in the South.

Editor Textile World:

How many knitting mills are there in Georgia, No. Carolina, So. Carolina and Alabama? What is the best source of information on this subject?

Latch Needle (153).

In the July issue of the Textile World on page 53 will be found the number of the knitting machines in each state of the Union, which, we presume, will give the information desired. The number of individual mills can be obtained from the Textile World's Directory; the number of knitting machines gives a better idea of the relative productive capacity of the mills in each state.

We know of no better source of information on this subject than the statistics in the Textile World, to which we have already referred.

Round and Square Cotton Bales.

Editor Textile World:

I would like information as to the round cotton bale. What are its advantages to the spinner? Is the fire risk reduced by using round bales, and do the insurance underwriters recognize such reduction by a reduced rate on cotton in round bales? How do the freight rates on cylindrical cotton bales compare with the rates on square bales?

Round-Square.

The domestic freight rates on cotton in round and square bales is the same. The railroad commissioners of Texas have recently been directed by the courts to grant a lower rate on cotton in round bales. The petitioners for a reduced rate showed that the freight on a carload of square bales averaged $144.16 or only 47 3/10 cents per car mile, while the freight on a carload of round cotton bales averaged $265.03, or 92 3/10 cents per mile. This decision has not yet been fol-

lowed by an actual reduction. We understand that the southern railroads have the question under consideration. Particulars of this decision will be found on page 55, July, 1901, issue of the Textile World. The ocean freight rates on round bales average about 25 per cent. less than on square bales.

The comparative fire risk with round and square bales can only be determined by observation of fires in which each kind of bale is subjected to the same conditions. So far there have been very few recorded cases of round bales having been on fire. We are informed, however, that insurance rates on cylindrical cotton have in some instances been reduced 25 per cent. from the square bale rate, where there were no square bales in the same building, and that later, when square bales had been placed with the round ones, the insurance was raised to the full rate. Nearly all of the cotton baled in cylindrical form is used in the mills of Continental Europe, and for this reason the manufacturers of that section are in a better position to judge of the merits of the cylindrical bale than are those of other countries. The Ost. Wollen und Leinen Industrie, an Austrian journal, has during the past few months published opinions from a large number of cotton manufacturers in Austria, Germany and Russia, on this question, and in another part of this issue we publish an abstract of the articles from the journal mentioned. The merits of the round bale are generally admitted, but we judge from the foreign opinions referred to that there are some difficulties connected with this bale which must be remedied before it will supplant the square bale completely.

Loss of Weight in Bleaching Cotton.

Editor Textile World:

What percentage of the weight of raw cotton is represented by the waxy or oily substance, and how much of this is removed in bleaching?

Shrinkage (147).

According to the investigations made by Dr. Schunk, raw cotton contains, besides hygroscopic moisture, about 5 per cent. of impurities, most of which are insoluble in water but soluble in alkalies or acids. By boiling cotton in soda ash for 7½ hours and adding excess of dilute surphuric acid to the resulting dark brown liquor, a copious, light brown, flocculent precipitate is obtained, while the liquid remains nearly colorless. When dried, it forms a brown, brittle, hornlike mass, translucent at the edges, and, when incinerated, leaves 2.3 to 6.9 per cent. of a light yellow non-alkaline ash.

The amount of this foreign substance removed by bleaching would depend somewhat upon the strength of the bleach; part of the material used in bleaching might remain on the fibre, thus counteracting a portion of the loss represented by the removal of the foreign matter. We should estimate the loss for the average bleaching process at from 2 to 5 per cent.

We have secured the following opinions on this subject from several practical bleachers: 1—Loss of weight in bleaching varies according to the stock, duration of the bleaching process and the quantity of cotton bleached. Many grades of cotton contain much dirt and foreign matter, the removal of which in the process of bleaching causes a loss of weight. Some grades will lose as high as 5 per cent. in one hour's boil; much of this loss is represented by dust, leaves or lint. A ⅞ to 1 inch cotton will lose about 3 per cent. during this boil. I should estimate the average loss to vary according to the quality of cotton, from 7 to 10 per cent. Cotton carded before bleaching will lose much less than otherwise. Hummel places the loss as low as 5 per cent., but in actual practice I think this figure will be exceeded. There can be no hard and fast rule laid down for the percentage of loss. 2—The loss of weight in bleaching cotton varies with the quality of the cotton, and in the case of cotton yarn is effected by the amount of twist in the yarn. If the material is in the form of woven or knitted goods the loss will vary according to the texture of the material; much depends also upon the method of manipulating the goods when bleaching. Part of the loss is caused by mechanical as well as chemical action. The following estimates of loss in bleaching cotton are the results of investigations conducted under my own observation: Cotton in the raw state, 4-6 per cent. Cotton yarn, 3 1/2-5 per cent. Knitted or woven cloth, 6-8 per cent. 3—The average loss sustained by cotton during the bleaching process is about 5½ per cent. This includes all extraneous substances that may be regarded as natural to the cotton fibre. There are some substances of a waxy nature about ½ to 3¼ per cent. of the weight of cotton, which can be removed by means of alkalies, but no sharp line of demarcation separates substances removable by boiling and bleaching. The 5½ per cent. will cover the loss by bleaching.

New Publications.

A Hand Book for Apprenticed Machinists; Brown & Sharp Mfg. Co., Providence, R. I. Price 50 cents. This small hand-book contains the information which the Brown & Sharp Mfg. Co. have found to be required by apprentices, and which oral methods of instruction fails to convey clearly to the mind of the learner. It treats of the care of machines and tools, turning, reeding drawings, lacing belts, signs and formulas, drilling, the screw and its parts, figuring gear and pulley speeds, changing gears for screw cutting, circular and straight line indexing and other valuable information, arranged in small compass and stated in clear and concise language. It will prove a very useful book for both apprentices and master machinists.

Cotton, by Henri Lecomte, Professor au Lycee Saint-Louis, Paris; illustrated; Georgis Carre et C. Naud, Paris. Price $2.25.

In writing this treatise on the culture and economic history of the cotton plant the author takes for his motto the saying of Dunoyer: "I impose nothing; I do not even propose anything; I simply expose." The first part deals with the world's production of cotton, the culture of the plant and physical and chemical characteristics. In the second part the author treats of the cotton manufacturing industry in the various parts of the globe. The work makes a book of 483 pages, illustrated with views of different cotton plants. The statistics are illustrated by means of many graphic charts, which greatly aid the reader in this branch of the subject. The culture of cotton is receiving much attention in other countries than ours at the present time, and this work of M. Lecomte, written in French and compiled with great care, will therefore prove especially timely and valuable.

The Coffee Plant, by Henri Lecomte; illustrated; Georgis Carre et C. Naud, Paris. Price $1.25.

This work treats of the cultivation, manipulation and production of coffee The subject is handled on the same plan adopted by the author in his recently published work entitled, Cotton, which we notice in these columns. The book contains numerous illustrations of coffee plants and the machinery used for manipulating the coffee berry. Graphic charts are used to illustrate the statistics cited, and a shaded map of the world shows the location and comparative importance of the different coffee producing countries.

The Cacao or Chocolate Tree, by H. Lecomte and C. Chalot; illustrated; Georgis Carre et C. Naud, Paris. Price 75 cents.

This work treats of the culture and properties of cacao. It is compiled with the author's usual care and contains illustrations of the cacao tree, blossoms, pods and seeds, also maps and charts.

Gutta-Percha Trees and Their Culture, by Henri Lecomte; illustrated; Georgis Carre et C. Naud, Paris. Price 75 cents.

M. Lecomte has written this treatise on the cultivation of gutta-percha after the same general plan that he adopted for his other works entitled, Cotton and The Coffee Plant. It is illustrated with charts and a map showing the gutta-percha growing countries.

Manual of Power Weaving, by Franz Reh; 220 pages, illus.; Carl Gerold's Son Wien. Price $2.00.

The author of this work is an Austrian mechanical engineer and instructor in the Vienna Textile School. The construction and mechanical operation of the power loom is clearly explained both theoretically and practically in the text, and the numerous illustrations leave nothing to be desired on this point. Following is an abstract of the table of contents:—Movement of the warp; Let-off and friction devices for the warp; Take-up; Temples; Formation of the shed; Harness motions; The lay; Filling box motions.

The work is n German and can be imported through this office.

Textile Texts for Cotton Manufacturers. The Draper Co., Hopedale, Mass.

This is a neatly bound volume of 297 pages, containing descriptions of the machinery built by the Draper Co., also valuable general information regarding the operation and care of cotton machinery, including articles on carding, spinning, spooling, warping, dyeing, reeling, twisting and weaving. These articles are of great value, being practical talks upon the management of the different departments, by practical men, who have met and overcome the difficulties of manufacturing, and who have spent years in successful management of mill departments. Many valuable tables are given and altogether the work forms a valuable handbook of cotton manufacturing which should be in the possession of every manufacturer and overseer.

Business Literature.

New Process of Humidification and Ventilation for Weaving and Spinning Mills, by Paul Kestner, Lille, France. In this pamphlet the author describes a system of humidification and ventilation, which has been invented and patented by him both in this country and abroad. He informs us that there are many mills in Europe equipped with this system which it is stated is giving highly satisfactory results.

The Industrial. The Industrial Mfg. Co., of Camden, N. J., has chosen an appropriate name for the neat publication which they announce will be issued with more or less regularity in the interests of their business, particularly the Industrial Overseamer, for which they are making a strenuous campaign on the "no royalty" basis. The first number recently received is neatly gotten up and contains a statement of their side of the trimmer litigation.

The Jeffrey Mfg. Co., Circular No. 63. In this booklet are illustrated different methods of transporting material by the conveyers manufactured by this company. There are views taken in chemical works, mines, reduction works, tanneries, canning establishments, logging camps, etc., together with illustrations of spiral conveyers, water elevators and screens.

Buffalo Disc Wheels. Buffalo Forge Co., Buffalo, N. Y. The complete line of Buffalo Disc Wheels of the pulley, steam and electric types, are shown and described in a new Buffalo Disc Wheel catalogue of twenty pages, and in addition applications of this type of fan to numerous uses are treated. The various tables and descriptions are arranged in a condensed form so as to comprise a complete condensed catalogue of the Buffalo Disc Wheels.

Buffalo Steel Pressure Blowers. This is the title of a booklet describing and illustrating the pressure blowers manufactured by the Buffalo Forge Co., Buffalo, N. Y.

Lowell Textile School, Lowell, Mass. We have received the 1901-2 catalogue of this school, which gives the usual information with illustrations of the work and recitation rooms.

—The Buffalo Steel Plate Planing Mill Exhausters, Buffalo Forge Co., Buffalo, N. Y. These are special types of centrifugal fans, and are applied for the purpose of exhausting shavings and sawdust from wood-working machines, refuse from emery wheels and buffing wheels and for other purposes of a like nature. A small catalogue just issued by this company illustrates and describes the various kinds of this type of fan.

—Buffalo "B" Volume Blowers, Buffalo Forge Company, Buffalo, N. Y. The numerous uses for which these blowers are adapted are well illustrated and described in a twenty-page booklet recently issued by that company. Although not claiming the pretention of a complete catalogue, this booklet is fully and handsomely illustrated and presents many tables of value and interest.

—Shavings and Dust Separator, Buffalo Forge Co., Buffalo, N. Y. This company has recently perfected the type now being constructed which is illustrated in a new folder. Copies of any of these books will be sent to any one upon application for the same.

New Color Cards.

—Benzo Fast Orange S for Discharge Effects in Printing: Farbenfabriken. Heretofore the difficulty in discharging the various cotton colors fast to acid, such as Benzo Fast Orange S, Benzo Fast Scarlet G S and Pluto Orange G, have prevented the use of these dyes for printing, although they have been very useful for the dyeing of cotton. Experiments made by the Farbenfabriken have resulted in the discovery that stannous lactate gives good results as a discharging agent, and this firm has issued a card showing three series of samples colored with the dyes already mentioned. The first series is discharged with acetate of tin, the second with zinc powder and the third with stannous lactate; thus showing side by side the results from these various discharging agents.

—Brown and Olive on Wool, Farbenfabriken. This card shows thirty shades of brown on woolen cloth and yarn, colored with Alizarine Brown A R A F and A W.

—Acid Chrome Black B and G, Farbenfabriken. This card shows four samples of worsted cloth dyed black with Acid Chrome Black B and G. Full directions and formulas are given.

—Benzo Fast Scarlet 8 B S, Farbenfabriken. This shows two shades of Scarlet on cotton cloth colored with Benzo Fast Scarlet 8 B S and 4 B S, also samples of cotton goods printed with Aniline Black, and topped with Fast Scarlet 8 B S and a fourth sample dyed with Benzo Fast Scarlet 8 B S, and discharged with Brilliant Wool Blue B and Wool Blue S R. On this card are shown four shades of Blue on worsted cloth dyed with Brilliant Wool Blue B and S R, and two samples of goods printed with the same colors.

In New York State.

In St. Johnsville all the mills are very busy on light weight balbriggans.

Charles Bailey & Sons at Fort Plain had quite a fire in their card room on the 22d of August. The damage was mostly by water, covered by insurance.

Robert MacKinnon's mills at Little Falls are running 60 hours per week. They have recently changed carders. John Calhoun is the new carder. George Babcock is the finisher; William Shepardson, boss spinner, and Jacob Anarcher, boss dyer.

The Little Falls Wool Extract Co. are running four days a week. Hudson Brothers are rather slack. The Rockton Knitting Co., of which James Henry is superintendent, are running 60 hours. Titus Sheard Co. are shut down, and do not know when they will start up. Nothing has been done in this plant for the last two months.

The Victor Knitting Mills are very busy, and are very nice people to call upon. A traveling man remembers the courtesies shown him on the road, and reciprocates whenever opportunity offers. The Riverside Knitting Company are also very busy; in fact, most of the cop yarn knitters are busy, while the others, with few exceptions, are not.

The Gilbert Knitting Co. are running their lower mill night and day with the following corps of overseers: James Dingman, carder; Robert Everhardt, spinner, and C. J. Dise, knitter. At the upper mill, John Dise is carder; Mr. Ford, knitter; Mr. Welsh, dyer, and Frank Tubbs, finisher. George Dise is superintendent of both mills.

At Ilion, the Sterling Mills are running full. The Paragon Knitting Co. at Mohawk are running full time, with good orders. W. P. Brayton is the manager of both mills.

The Mark Mfg. Co. at Herkimer are running 60 hours per week, but not all the machinery is busy. The Gem Knitting Co., who are using cop yarn, are very busy.

S. D.

The "Rim-Friction" Clutch.

We desire to call attention to the clutch made by the James Smith Woolen Machinery Co., Philadelphia, Pa., which has been constructed to adapt it to high speeds and heavy loads. It is simple in construction and positive in its action. There are no springs connected with this clutch, and those who have used it say that the repairs are very small.

The wooden shoes which grip the rim of the pulley can be removed without disturbing the clutch itself. The pressure of both lower and upper sets of shoes on the rim remains constant. The outside and inside jaws have independent adjustment, which can be made with great accuracy. This clutch is made in all sizes for various horse powers. Further information can be secured from the builders.

To Buffalo It Is.

Barnum's great circus was called the greatest show on earth, and even with its carefully worked out details it is not comparable to the Pan-American Exposition which is now showing at Buffalo.

The buildings are beautiful to behold, the electric effects nothing short of marvelous, the exhibits of a character interesting and instructive, the grounds truly a bewildering paradise, the midway, without exception, the most complete ever opened for public visitation, and all this in one of the finest cities in the country.

The Boston & Maine R. R. will carry you to Buffalo from any New England point, over a variety of routes either one of which is picturesque and worth traversing. The car service is complete and the equipment of Pullman parlor and sleeping cars is of a high standard of excellence. The trains are fast ones and the rates low enough to attract every tourist. If you are going to do the Pan-American, send your address to General Passenger Department, Boston & Maine R. R., Boston, for the forty-page Exposition book.

—The Hubbard & Eldridge Co., manufacturers of fancy rockers, Rochester, N. Y., in a letter written Dec. 6, 1898, to the Warren Company, manufacturers of Warren Pulley Cover, Chicago, said Warren's Pulley Cover" is enabling the operator of our saddle seat scooper to turn out from forty to fifty more seats daily than he heretofore could. We therefore figure that the pulley cover on that one machine is worth 35 cents a day to us. This is only one of many instances where the cover has saved us time and money by increasing the capacity of our machine.

—The U. S. Steel Corporation, the largest concern in the world have in use over 100 Cross Oil Filters in their mills. They were furnished by the Burt Mfg. Co,.of Akron, O.

"Cotton Chats."

This is the first of a series of leaflets issued by the Draper Co., for the purpose of calling the attention of the trade to improvements in their machinery which are not important enough to warrant the issue of new circulars on the entire machine. They are to be issued at irregular intervals, as required. The first one is an introduction to the series; the second describes the new hopper for the Northrop loom and a new warper.

Recent Orders.

The Howard & Bullough American Machine Co., report the following orders recently received by them: The Hall & Lincoln Co., Moodus, Conn., picking machinery. Woodstock Cotton Mills, Anniston, Ala., picking machinery, revolving flat cards, electric stop motion drawing frames, slubbing and roving frames, spinning frames and twisters. Granite Mills No. 2, Fall River, Mass., electric stop motion drawing. Kinston Mills, Kinston, N. C., picking machinery, revolving flat cards, electric stop motion drawing, slubbing, intermediate and roving frames.

Cotton Yarn.

The British Cotton and Wool Dyers Association, Ltd., is making a specialty of quick delivery of mercerized and plain cotton yarns. This is a very large concern whose facilities are such as to enable them to carry large stocks, or make up promptly special orders. They handle combed Egyptian, Sea-island and Peeler yarns from 3's to 200's, 2 ply, in natural colors, whites and fast blacks, on skeins, cones, warps and cops. The American branch is at 231 Chestnut street, Philadelphia, and Theodore H. Strouse is sole agent for the United States.

—Stuart W. Cramer, Southern agent for the Whitin Machine Works, Kitson Machine Co. and the Woonsocket Machine & Press Co., has opened a branch office at Atlanta, Ga., in charge of Mr. A. F. Walker, mill architect and engineer. A recent acquisition to Mr. Cramer's engineering staff at Charlotte is Mr. R. C. Biberstein. Mr. Cramer's office has designed and made the plans for nearly 100 cotton mills in the South, and has furnished the complete equipment for almost all of them, besides furnishing the whole or part of equipment for other mills designed by others.

—Soluble Softening Oil, manufactured by the Arabol Mfg. Co., N. Y. City, is claimed to be superior for use as a softener, surpassing tallow, and that it always remains in sweet condition summer and winter. Other features claimed are that it gives a smooth finish to the warps; the threads divide well in the lease rods, and the cylinders of the slasher remain perfectly clean. It is neutral, and most suitable for strong and close woven goods, such as corduroys, velveteens, sateens, twills, umbrella cloths, cambric warp, etc., and is easily handled.

—The firm of Gilbert Bros. & Co. has been incorporated under the name of Gilbert Brothers Company.

Waste in the Dye House.

One great source of waste in dye shops occurs in the buying of stock. Often hundreds of pounds of stock are purchased and delivered without there being any suitable place fit to store even one-fourth the amount. In consequence the stuff has to be piled out of doors, the exposure to the weather causing a waste that more than counterbalances any gain which arises through buying in large quantities, for much is lost by the time the material can be used up.

It should be a rule never to buy more stock than there is room for in the shop. Waste often occurs which could easily be prevented and loss from this cause appears everywhere from beginning to end of every process. Too much material is taken and the excess is simply run into the drains without a thought as to how it can be used up.

In the bleach croft there is often much waste of stock, of time, and of chemicals. Hundreds of pounds of lime are uselessly consumed, and in the chemic shop in some cases one-half the total amount of bleach goes into the drain. From the bleach croft to the finishing shop, waste occurs through loss of stock, loss of time and needless wear of the machinery. In some mills, says the Dyer and Calico Printer, through want of care in seeing that the right quantity of water is used in their baths, two and even three per cent. of all the dyestuff used is wasted.

In some localities it is possible to walk for several miles down a stream on which half a dozen mills are situated, and the waters will be found discolored with excesses of dyestuffs which have been run away to waste into the stream.

In the dye store room have a table or bench run round the walls about 2 ft. 6 in. in height. Under this can be put the larger kegs of dye and chemicals, not directly on the floor, but on a stillage placed a few inches above. See that these kegs are properly labelled so that no mistakes can be made. Above the bench can be arranged shelves for the smaller tins of color, and stocks of those chemicals of which small lots only are used. The bench serves to hold the needful scales for weighing these out and for carrying on the necessary manipulations connected therewith. Keep the place warm in winter and have it well lighted.

A Vacation Recreation Place.

Northern New England is the summer pleasure and vacation ground for the world. No other section can boast of scores of lakes, a hundred beaches and a whole mountain range within the meagre boundaries of a hundred square miles, yet this is what New England has, and, though there are thousands of tourists annually at these resorts, there can be accommodated hundreds of thousands more.

Every nook and corner of New England is an outing resort and the Boston & Maine lines reach all of the leading ones. If you are interested in or intend to take a vacation this season, you want a Boston & Maine Excursion Book. It's free for the asking. Send a postal to General Passenger Dept. (21), B. & M. R. R., Boston.

Schoon & Crabtree.

Schoon & Crabtree is a new firm composed of A. E. Schoon and B. Crabtree. They have recently bought the worsted machinery in the mill at the corner of 21st and Naudain Sts., formerly operated by A. R. Elsasser, and will carry on a business of commission combers and spinners of worsted yarn.

Medal Awarded.

The New England Cotton Manufacturers' Association Medal for general excellence in scholarship at the New Bedford Textile School has been awarded to Nelson Allen Wood, of New Bedford.

Mr. Wood has been a student of the day classes of the institution since the school was opened and graduated last June with a very high record in his studies.

The medal is given by the New England Cotton Manufacturers' Association from the proceeds of the Moses Pierce Fund, with the intention of developing and improving everything pertaining to the manufacture of cotton and as an incentive and a just reward to some of the young captains of industry who are now students in the textile schools.

The medal was awarded by a committee of the association consisting of Herbert E. Walmsley, chairman, George A. Ayer and Albert R. Pierce.

Mr. Wood, the recipient, is a son of Allen F. Wood, the principal of the Fifth Street Grammar School of New Bedford.

Gozoil.

We hear very satisfactory reports from the manufacturers who are using this softener both for cotton yarns and hosiery and as a finisher for piece goods where a high finish is desired, as in linings. Gozoil is made both clear and white, the former for colored goods, and the latter for blacks. Hosiery manufacturers who are doing their own dyeing will appreciate a product of this kind which brings out and brightens the shade, giving a much more attractive finish than the dead, lifeless colors which are so frequently seen in the market. Specially strong claims are made for the good results on mercerized goods, both yarns and piece goods. One large mercerizer advises the Wilmington Oil Co., Wilmington, Del., that he has found nothing so good for a softener and finisher as this gozoil.

—The American Moistening Co. have received repeat orders for humidifiers from the Bennett Mills, New Bedford, Mass., and the Erben-Harding Co., Philadelphia, Pa.

—Large orders for humidifiers have been given to the American Moistening Co., by the Lowe Mfg. Co., W. Huntsville, Ala., and the Lonsdale Company, Lonsdale, R. I., the last named order is to cover the entire weaving department of the Ann and Hope mills.

—George Shimer & Son, Camden, N. J., have adopted the American Moistening Co.'s system of humidifiers, and the Waldrich Bleachery & Dye Works have ordered two Aerophor fabric dampeners from the same company.

Recovery from Effects of Fire.

Stafford & Holt, of Little Falls, N. Y., builders of automatic circular and flat latch needle rib knitting machinery, suffered some inconvenience and loss at a recent fire which took place in their factory. The loss was covered by insurance, and steps were immediately taken to transfer the undamaged machinery to another building, which will give them considerable more room, which was needed, and they are now on Mill Street, next to Robert MacKinnon's new mill, and have put in additional machinery, so that their customers will not be inconvenienced by any delay.

An Important Order.

The New Process Raw Hide Co., Syracuse, N. Y., is in receipt of an order from an Eastern machine company for 10 pair of gear wheels, the larger to be cut cast iron, and the smaller New Process raw hide, making a noiseless combination. The cut cast iron gears run from 20 inches to 80 inches, and the raw hide pinions from 6¾ inches to 16 inches in diameter. The total amount of the order is above $2,000.00.

Among the Western Mills.

I find the Western mills very well employed and the Ipava Woolen Mill, one of the busiest plants I have thus far visited. They have all they can take care of and more too, running seven out of their nine broad looms on homespuns and two on their regular blanket work. They will scarcely be able to fill the orders they have thus far taken.

This plant never stops except for repairs, and runs at least ten hours the year round, and until 9.30 in the evening for five months or more. Charlie Foote is a hustler and is getting there in good shape, which he surely deserves.

In the last two years he has made some important improvements in his up-to-date mill, and now contemplates installing several more broad looms at an early date.

Oliver Prichard has charge of the weave room and is a first class man, who thoroughly understands his business.

At Jacksonville, Ill., they are also very busy and running full time. These people have a fine, well equipped mill, and know exactly how to run it. The Capps are full of business, but have time to treat a traveling man well. Mr. Paul Alexander, supt., knows what he is doing. This plant has just made important improvements and is today one of the leading mills in the West. The writer knew this plant when they carded rolls by horse power back in the sixties, and saw the performance himself several times when visiting Jacksonville to see a brother then in charge of the dyeing and finishing at the House Woolen Mfg. Co.'s mill.

At Springfield, Ill., I also found them running full time with plenty to do. While there Mr. Capps took me into their wool loft and showed me one pile of graded wool containing more than 50,000 lbs. and, I must say, it was as good a lot as I ever saw.

These people are making a fine line of men's wear, all wool goods in very desirable patterns, and I understand are having a good run on them. The Supt., Mr. Henry Engelskirchen is a good manufacturer and understands his work.

There are good rains all through this country now and everything points toward a good fall business.

By the way, the Textile World and Directory is in every mill I have visited recently and they all speak well of them. Will write later. F.

A Palatable Feast for 2 Cents, Try It.

Did you know that the Deerfield Valley and Hoosac Country traversed by the Boston & Maine Railroad is one of the most beautiful regions in the country?

As a scenic paradise it has no equal. On every side the scenes change with panoramic swiftness to the intense delight of the beholder.

Then, too, there is no little historic interest attached to the territory journeyed through.

This interior country is a delightful vacation ground, and on every hand there is to be found unlimited accommodations for the vacationist who delights in a rural out-door life. Another pleasurable feature is its accessibility from not only the whole of New England, but from New York and the West as well.

The Boston & Maine has just issued a book bearing the name "Hoosac Country and Deerfield Valley," which is a delightfully written story of the country, and after reading it you will want to visit the region. Send a two-cent stamp to General Passenger Department, Boston & Maine System, Boston, for Book No. 15; you will enjoy reading it.

Hand Painted Cloths of India.

Khalam-kar or hand painted cloths cannot be placed in competition with European productions of a similar character, which, so early as the days of the Moghul Emperor Akbar, attracted the remark of being "the wonderful works of the European painters of world-wide fame." But the boldness of the designs, with the careful draughtsmanship of the minutest details, and their general finish and harmonious coloring, give them a fascination of their own, and this, taken with their cheapness, would necessarily find them favor in the eyes of many purchasers, if they could only be introduced in merchantable quantities into Europe. They can be utilized as tablecloths, bed-sheets, curtains, and other articles.

The process of making these cloths is remarkably primitive and simple. The first stage in the process is the preparation of the cloth for the painting. This is done as follows. A sufficient quantity of gall-nut is powdered and boiled in water, and the sediment is removed; after which one-fourth measure of buffalo's milk, or one-half measure of cow's milk, is mixed with water; the cloth is then put into it and saturated; and after a time it is taken out, strained, and al-

lowed to dry. It is subsequently folded and beaten down with a dyer's block. The cloth is now ready for purposes of painting. The painter takes a quantity of alum, and boils it in water. With this solution, which gives a pale dark color, flowers and other objects are drawn artistically with a brush, or printed with a block on the cloth. The cloth is now dried, and gently washed in water. It is then boiled in water with pounded roots of numa (Morinda umbellata). During the continuance of the boiling process, which lasts for nearly three hours, the cloth is frequently stirred up with a stick. It is then taken out, and left to cool. When cooled, it is immersed in water mixed with sheep-dung, and immediately taken out. It is again washed well, and dried by spreading for nearly six hours over the damp sand in the river bed. This process renders the vacant spaces between the flowers white. The white portions are then colored with dyes of local manufacture, or with any European dye, after it has been boiled with gall-nut water. White and black, are believed by the Hindus to be the origin of all colors, and are looked upon as extremes, and as the component parts of the other color. Indigenous black color is obtained by burning pieces of old iron in dry plantain leaves; and then boiling them in water with sugar-cane jaggery and pounded marking nut (Semicarpus Anacardium). Yellow is manufactured by dissolving Bengal saffron with apiakaram, a substance akin to soda, and boiling in water with gall-nut "flowers." Green color is obtained by dissolving pure indigo in similarly treated water. Other colors are prepared by similar devices, and each color is painted in separately. Finally, the cloths are soaked in boiled rice water and strained. They are then ready for the market.

The price of a bed-sheet of khalam-kar ranges from 30 to 40 cents.—Jour. Soc. of Arts.

He Saw It. Will You?

BEWILDERING SIGHTS ON EVERY HAND.

One who has recently returned from the Pan-American at Buffalo opines thus: —"It would be difficult for the most gifted writer to adequately portray and describe this wonderful Exposition." In the choice of the site, a most ideal selection was made and the person who has not visited the grounds has but a slight conception of the marvelous beauty and colorings of the buildings. What was a barren waste is now a most artistic park land adorned with a wealth of foliage and innumerable fantastically designed beds of flowers. The part played by electricity in the mammoth show has never been equaled and the grounds and buildings are dazzlingly radiant with an electric illumination which is to the beholder almost bewildering. The Midway is the best yet, according to exposition goers, and in a few, all too short, hours one gets an inkling of the life of half a dozen countries. Uncle Sam has an exhibit which is the admiration of every visitor. Music, and there is music everywhere, and by fine bands and musical organizations, too. Every visitor gets his money's worth and ten times over at that. There are a thousand other features which might be mentioned, but you will see them when you get to Buffalo.

Did you know that the Boston & Maine has several routes to Buffalo? either one of which has attractive features galore; and if you are a Pan-American tourist, send to the General Passenger Department of the Boston & Maine Railroad (X), Boston, for the book "Pan-American Information." It's a corker, and you'll enjoy perusing it. It's free for the asking.

English Cotton Yarn and Cloth.

The following list gives current quotations on cotton yarn in England, and it will be interesting to compare these figures with the prices now ruling in the domestic market:

Yarn, Medium, Single on cops.

4s to 16s twist	11½ to 14
40s twist	15¼ to 17
50s twist	17¾ to 19¾
30s weft	12¾ to 14½
40s weft	13¾ to 15
50s weft	15¾ to 17
60s weft	18¼ to 19¾
80s weft	22¾ to 24

Egyptian Single on cops.

60s twist	20¼ to 22½
80s twist	26 to 30
100s twist	34 to 44½
120s twist	40¼ to 49
60s weft	19½ to 21½
80s weft	23 to 25½
100s weft	29 to 35

2 Ply Yarn on cops.

20s	13½ to 15
40s	16¼ to 18¼
60s	21¾ to 27¾
80s	29 to 38
100s	35½ to 47½

CLOTH.

Width.	Ends per 1/4 in.	Yds.	Yarn Nos. or weight	Prices per cut.	Prices per yd. cents.
32 Printers	16 x 16	116	32's to 50's	$2 98 to $3.22 1/4	2 9/16 to 2 3/4
36 "	19 x 22	50	11 3/4 lbs.	2.31 1/4 to 2.49 1/4	4 5/8 " 5
38 Shirtings	12 x 12	37 1/2	30's to 30's	1.15 1/2 " 1.40	3 " 3 3/4
50 "	16 x 15	37 1/2	10 lbs.	1.67 1/4 " 1.88 1/2	4 1/2 " 5
29 T. Cloths	12 x 10	24	4 "	.74 3/4 " .89 1/4	3 1/8 " 3 3/4
32 Mexicans	18 x 18	24	7 "	.97 1/4 " 1.17 1/2	4 " 4 7/8

Textile Patents.

(*Continued from page 455*).

Loom Weft Controlling and Replenishing Mechanism. 681,164 and 681,165. William H. Baker, Central Falls, R. I. and Frederic E. Kip, Montclair, N. J.

Loom and Filling Carrier Therefor. 679,941. Robert Burgess, New Bedford, Mass.

Loom, Bag. 679,895. George F. Hutchins, Worcester, Mass., assignor to Crompton & Knowles Loom Works, same place.

Loom Filling Replenishing Mechanism. 680,169. Jonas Northrop, Hopedale Mass., assignor to Draper Company, same place and Portland, Me.

Loom Reed Motion. 679,863. Eppa H. Ryon, Worcester, Mass., assignor to Crompton & Knowles Loom Works, same place.

Loom Shedding Mechanism. 680,181. Hermann Staubli, Horgen, Switzerland.

Mercerizing Machine. 679,425. Adolf Kertesz, Mainkur near Frank-on-the-Main, Germany.

Ramie Fibre Treating. 679,508. Heinrich Linnekogel, Stuttgart, Germany.

Spinning, Doubling and Twisting Machinery. 679,416. Phineas P. Craven, Manchester, England.

Spinning Frame. 680,194. Robert J. Chapman, Lowell, Mass. assignor to Draper Company, Portland, Me., and Hopedale, Mass.

Waterproof Fabric and Product Thereof. Making. 680,733 and 680,734. Alf. M. Posener, London, and Frederick W. Clerke, Tottenham, England, assignors to the "N. L." Syndicate, Limited, County of Middlesex, England.

Weaving Machine. 680,705. David S. Earhart, De Land, Fla.

Winding Machine, Yarn. 679,428. Arthur W. Metcalf, Belfast, Ireland.

Wool, Extracting Fat from. 679,777. Georges Peltzer, Verviers, Belgium.

Wool, Fat, Extracting. 680,963. Harriet F. Cutter, East Lyme, Conn., executrix of Frederick W. Robinson, deceased.

Wool Grease, Treating. 680,977. John Hopkinson, Bradford, England.

Woven Fabric. 681,126. Jas. Livingston, Philadelphia, Pa.

MILL NEWS.

Cotton.

New Mills.

—*Alabama, Gaylesville. The new cotton mill to be established here will be known as the Gaylesville Cotton Mill Co. They will start building as soon as possible, although at present time details have not yet been completed. Sheeting will be made.

—*Alabama, Huntsville. The contract for the Eastern Manufacturing Co.'s $100,000 plant has been secured by the Fulcher Construction Co. of Nashville, Tenn.

—*Alabama, Huntsville. The Madison Spinning Co.'s buildings will be so far completed by the 1st of September as to be ready to receive the mules and other machinery. This company, as already reported, will manufacture hosiery yarns.

—*Alabama, Stevenson. We understand that the remaining portion of the $50,000 stock of the new Broadus Cotton Mills has been taken up.

—*Arkansas, Monticello. The Anderson Cotton Mills have been fully organized with capital stock of $80,000, which has been subscribed. Construction of the building is now under way. Equipment for making sheetings and osnaburgs has not yet been decided. Maj. W. M. Anderson is at the head of the project.

—*Georgia, La Grange. The machinery is being installed in the Unity Cotton Mills, which C. V. Pruitt, the president, contemplates having in operation November 1st.

—Georgia, Middleton. Colonel George C. Grogan is interested in the establishment of a mill near this place, in which Cuyler Smith (Atlanta) and J. H. Bromley (Philadelphia) are also associated. The new plant will be called the Bannockburn Cotton Mills, with capital stock of $80,000, and will manufacture a high grade of cottonades. The mill will have an equipment of about 7,200 spindles and 250 looms.

—Maine, Augusta. The United States Flag Decorating Company has been incorporated under laws of this state with capital stock of $10,000. Alfred B. Allen (Boston) is president and A. B. Hanson (Boston) treasurer. They propose manufacturing and dealing in bunting and flags.

—Massachusetts, Fall River. It is current rumor that the management of the Davol Mills and the Stevens Manufacturing Co. will erect a mill for the manufacture of linen goods.

—*Massachusetts, New Bedford. Work of construction on the new Soule Mills is progressing slowly on account of inability to secure the necessary material. The walls are partly up on the spinning mill and weave shed.

—*Mississippi, Starkville. W. W. Scales is president and W. W. Scales, Jr., secretary and treasurer of the John M. Stone Cotton Mills, incorporated with capital stock of $125,000. They have not yet made any definite decision as to goods to be manufactured nor machinery equipment.

—*Mississippi, Yazoo City. It is expected that the machinery will be set up in

the Yazoo City Cotton Mills, upon which work of construction is progressing rapidly, in time to start operations by November 1st.

—North Carolina, Bessemer City. The Bessemer City Cotton Mills, which have been incorporated with capital stock of $125,000, J. A. Smith, president, will manufacture fine shirtings (striped goods). They expect to begin operations about February, 1902.

—*North Carolina, Charlotte. The Alpha Mills have been re-organized as the Orient Manufacturing Co., with capital stock of $200,000; H. D. Wheat, president and treasurer. The mills, which are at present equipped with 6000 spindles and 160 looms, will be started up with 7000 spindles and 160 looms additional, about November 1st, as per our report of August 16th. They will make sateens, madras, momie cloth, leno, dimity cloths and 2-ply 30s to 40s yarns from Miss. staple cotton.

—*North Carolina, Elkin. Work has been completed on construction of the new two story building for the Chatham Manufacturing Company, and work on installing machinery will start at once.

—*North Carolina, Graham. The Travora Manufacturing Company expect to begin operations in February, employing about 30 hands. There will be 2500 mule spindles and 100 looms; steam power. Denims will be manufactured, and after they get well under way, soft yarns and napped goods. J. H. White is president and buyer, and W. E. White the treasurer. Capital stock, $100,000. Will sell direct.

—*North Carolina, Henrietta. The dam across the Second Broad River for the Cliffside Mills is completed and work on the factory building itself is rapidly being pushed.

—*North Carolina, Lumberton. The new plant of the Lumberton Cotton Mills has been completed and preparations are being made to start running next month. They will manufacture number 20 to 32 yarns, operating 5,000 spindles.

—*North Carolina, Marshall. We learn that Senator Pritchard is not directly interested in the proposed electrically driven cotton mill, but that Hon. C. A. Reynolds, of Winston, N. C., is one of the interested parties, and will probably give information as to the plans.

—*North Carolina, Morganton. Work is proceeding rapidly on the construction of the new mill for the Alpine Cotton Mills, and it is expected that operations will be begun by October. Mill will have equipment of 7,000 spindles for making fine yarns.

—*North Carolina, New Bern. At a recent meeting of the directors of the Pembroke Manufacturing Co., it was decided not to build their proposed mill until 1903. The company does not feel that it is wise to carry on their enterprise until, at least, 36 per cent. of the capital stock has been paid in.

—Pennsylvania, Milton. Thomas Henry, Jr. & Co. have placed their order for revolving flat cards for their new mill with the Howard & Bullough American Machine Co., Pawtucket, R. I. These cards will contain all the latest improvements.

—Rhode Island, Providence. A new firm, known as Barwood & Burt, has been started at 250 Weybosset Street, manufacturing lace, net and muslin.

—Rhode Island, Woonsocket. The Woonsocket Corduroy Company has leased space in the mill vacated by the American Worsted Company and is making preparations for starting manufacture of corduroys, etc., with 30 looms. J. F. Dustin is manager of the concern.

—*South Carolina, Charleston. Work on the Royal Bag & Yarn Factory is being pushed very rapidly, and the buildings will be ready for the installation of machinery shortly.

—*South Carolina, Lancaster. The Lancaster Cotton Mills, reported in July, will have an equipment of 1600 looms, besides their 52,000 spindles. The plant is to be run by electricity.

—*South Carolina, Newberry. Work on building the Mollohon Mfg. Co.'s plant will start very soon. E. B. Wilbur, general manager and superintendent, is in the North now negotiating for machinery.

—*South Carolina, Whitmires. The mill building for the Glenn-Lowery Manufacturing Co. is about ready for the installation of the machinery. The equipment will comprise 25,000 spindles and 650 looms.

—*Texas, Belton. Work of setting up the machinery for the Belton Cotton Mill is practically finished, and the plant will probably be in operation in a few weeks.

—*Texas, Dallas. The New Century Cotton Mills Company, J. E. Wiley, manager, contemplates having the mill in operation by first week in September. This mill will be operated exclusively by colored help.

—*Texas, San Antonio. L. J. Hart of the Business Men's Club advises us that the report of cotton mill projected is yet in a formative state; that, being midsummer with a great many of the leading men away, the matter would not be pushed actively until another month. He is in correspondence with outside capitalists and is in hopes of raising a sufficient stock subscription to meet their demands.

—Washington, Seattle. Andrew Weber, of Chicago, is said to be the president of a large fish net and twine mill which is to be located here.

Enlargements and Improvements.

—*Alabama, Anniston. The Woodstock Cotton Mills inform us that their mill was originally built for 10,000 spindles and that the order has been placed for additional machinery to fill up, having started operations with 6,000 spindles. They will make two, three and four ply yarns, skeins and cones.

—*Alabama, Florence. Work has been started on the excavations for addition

to be erected by the Ashcroft Cotton Mills, to double the capacity of their plant. They will install 3,000 more spindles and 100 looms, when completed.

—Alabama, Riverview. The Riverdale Cotton Mills expect to erect a three-story building on the site of their old cloth room. This will be filled with new machinery on its completion.

—California, East Oakland. The California Cotton Mills have just placed a further order with the Howard & Bullolgh American Machine Co., Pawtucket, R. I., for speeders.

—Connecticut, Moosup. The Aldrich Manufacturing Co. will build an extensive addition, and make important improvements this fall. Howard & Bullough Am. Mach. Co. cards have been ordered.

—*Georgia, Griffin. The Rushton Cotton Mills, which we previously reported would double the capacity of their plant, inform us that they will install 5000 spindles and 128 looms in the new building, which they contemplate having ready to start operations December 1st, 1901.

—Georgia, Hampton. A complete system of electric lights is being put in the Hampton Cotton Mills.

—*Georgia, Hawkinsville. The Hawkinsville Cotton Mills will install looms in the plant for purpose of manufacturing cloth in addition to yarns.

—Georgia, Pelham. The Pelham Cotton Mills will build an addition to their mill.

—Georgia, West Point. The Langley Manufacturing Co. have just installed eleven new looms, and will put in four more, twenty-seven in all. These looms have cam, dobby and Jacquard attachments, manufacturing lap robes, bath robes, fancy ducks, etc. They buy 3's to 30's yarns, single and ply. E. Lang is the president and general manager.

—*Kentucky, Henderson. The Henderson Cotton Mill Company proposes issuing $50,000 new stock, the proceeds to be used in completing and equipping the new mill now under construction.

—Massachusetts, Easthampton. The West Boylston Mfg. Co., which has recently completed erection of a new mill and made extensive enlargements and improvements to the old Williston Mills, will erect another mill, which will be about 130 by 75 feet, three stories high.

—Massachusetts, Fall River. The directors of the Wampanoag Company are contemplating the addition of machinery for making fine goods, and may erect a new plant.

—Massachusetts, Fall River. The Fall River Manufactory, which has been closed for some weeks, has placed an order with Kilburn, Lincoln & Co., for 500 looms.

—Massachusetts, Lowell. The Boott Cotton Mills are now having erected a large number of spinning frames, which are being furnished by the Howard & Bullough American Machine Co., Pawtucket, R. I.

—Massachusetts, Lowell. The Boott mill is rapidly installing Draper looms as fast as they arrive. The Prescott are putting in about 400 Draper looms, and nearly the same number are going into the Appleton.

—Massachusetts, Lowell. Work has been started on building an addition to the finishing room of the Merrimack Mfg. Co.'s mill. The capacity of that department will be greatly increased.

—Massachusetts, New Bedford. The Acushnet Corporation will put in 1800 new Whitin looms, some of which are expected shortly. Old looms will be thrown out to make room for the new ones.

—Massachusetts, North Adams. An addition 45 by 85 feet, two stories, will be built for the Greylock Mills. New building will be equipped with new machinery for making a fine grade of goods.

—Michigan, Owosso. The knitting mill previously reported as to remove to this place in case sufficient inducements were offered is that of Burnett & Co., now located at Osseo. It will be known hereafter as the Burnett Knitting Co. They manufacture socks, canvas gloves, mittens, etc., with 10 machines, and presumably will increase their plant in their new location.

—New Jersey, Deckertown. The Sussex Mills have absorbed the entire towel plant of Whittaker & Wehnert Manufacturing Co. The negotiations were only concluded this week.

—New York, Oswego. A special meeting of the stockholders of the Standard Yarn Co. will be held on Aug. 15th. The company proposes to increase the capital stock from $125,000 to $200,000. In case this increase is made, they will pay off their present indebtedness, and increase the capacity of the plant by adding new machinery.

—North Carolina, Concord. A small addition will be built to the Cannon Mfg. Co.'s mill; viz., a cloth room.

—North Carolina, Kings Mountain. The Bonnie Cotton Mills, which are comparatively new, will install 1000 additional spindles in the mill this fall, giving them a total of 5300 when completed.

—*North Carolina, Graham. Regarding report of additional machinery to be installed in the Sidney Cotton Mills, an engine and boiler are being put in.

—North Carolina, Greensboro. The Revolution Cotton Mills have recently completed erection of a new building, 136 by 60 feet, 2 stories, for a cloth room. They have also installed eight nappers.

—North Carolina, Kinston. The Kinston Cotton Mills are making large additions of machinery to their plant. The order for picking machinery, revolving flat cards, electric stop motion drawing, slubbing, intermediate and roving frames has been let to the Howard & Bullough American Machine Company.

—North Carolina, Raleigh. It is reported that the Neuse River Cotton Mills contemplate doubling the capacity of their plant (5000 spindles and 150 looms).

—North Carolina, Ramseur. The Columbia Manufacturing Co. is reported as installing two new water wheels. Other additions of machinery are contemplated.

—*North Carolina, Spray. Machinery, including additional spindles, has been ordered for the Nantucket Mills. The new portion of the plant is expected to start about August 1.

—Rhode Island, Hill's Grove. The Elizabeth Mill Co. is to install five new boilers in the plant at this place.

—*Rhode Island, Lonsdale. Contract has been let by the Lonsdale Co. to J. W. Bishop Company, of Providence, for erection of their large additions. It is expected work will start at once.

—*Rhode Island, Lonsdale. Operations have been stopped in the Lonsdale Company's old No. 1 Mill and in a short time the operatives employed in this branch will take their places in the addition recently completed to the Ann & Hope Mills, where machinery has already been installed.

—Rhode Island, Providence. Contract has been let to Lewis J. Pierce for the erection of a new building, 124 by 55 feet, three stories and basement, for the Elmwood Mills. Building will be of brick and heavy mill construction.

—*Rhode Island, Warren. The work on the addition to the Warren Manufacturing Co.'s plant is progressing rapidly, the exterior being completed to nearly the second story. This addition, which will be of the same height as the main building, will be utilized for manufacturing fine goods, started by the company some time ago.

—Rhode Island, Westerly. The Solway Mills have recently received 50 additional looms, which they are placing on the third floor of their mill, hitherto unused. This gives the company a total of about 250.

—*South Carolina, Anderson. The Cox Manufacturing Company expects to have their new addition ready for operation November 1st. The present number of spindles (3120) will be doubled. It is also stated that 200 fancy looms will be installed later.

—South Carolina, Darlington. It is reported that the Darlington Cotton Mills will install 600 more looms in the mill.

—*South Carolina, Easley. The Easley Cotton Mills are not building a new mill, but intend adding a 2000 spindle equipment to their plant. This will raise the number to 12,000 spindles.

—South Carolina, Liberty. A meeting will be held at the office of the Liberty Cotton Mills on September 12th, for purpose of considering the issue of 350 shares of preferred stock at par value of $100 each.

—*South Carolina, Yorkville. The Sutro Cotton Mills have re-organized with a capital stock of $40,000. The new directors are G. H. O'Leary, W. Brown Wylie, Dr. W. G. White, B. N. Moore and S. M. McNeel of Yorkville; M. L. Smith of Clover and a Mr. Eddy of Charlotte, N. C. As stated before, new machinery will be put in. We believe it will be re-named "Tavona Mills."

—Rhode Island, Valley Falls. The Samoset Co., formerly the Albion Mill, is making the changes which were contemplated at the time of the recent purchase. The dyehouse is being remodeled, and a new storage building erected and other changes are in contemplation. Some new machinery is being put in.

—*South Carolina, Cateechee. The Norris Cotton Mills Co., manufacturers of wide sheetings, have added carding and spinning machinery, and discontinued night work in these departments. They now have a total of 13,248 ring spindles and 352 looms.

—*South Carolina, McColl. The Howard & Bullough American Machine Co. of Pawtucket, R. I., have received the order for the machinery for the enlargements being made at the plant of the McColl Manufacturing Co., including cards, drawing frames, slubbing, intermediate and roving.

—Virginia, Petersburg. The Pocahontas Cotton Mills are installing new machinery, the mill being closed at this time.

Mills Starting Up.

—*Alabama, Columbia. Operations will probably be started up this week in the Columbia Cotton Mills, which have been shut down for the summer. Several new machines were installed during idleness.

—*Georgia, Columbus. The Bibb Manufacturing Co.'s new mill will employ several hundred people, and they expect to have it started by the middle of September.

—*Georgia, Gainesville. The Pacolet Cotton Mill will start early in October with a half force, probably 500 operatives. Very nearly all of the machinery is in pace.

—*Georgia, Lavonia. It is expected that the new Lavonia Cotton Mills will start about the 1st of September.

—*Georgia, Lawrenceville. It is reported that operations will be started up very soon in the Gwinnett Cotton Mills, under management of W. L. Peel, the receiver.

—*Georgia, Tennille. Work will be started at once equipping the Tennille Cotton Mill so that operations may be resumed, as satisfactory arrangements have been made with the creditors.

—*Massachusetts, Chicopee. The Olmstead & Tuttle Co. expect to start their carpet lining factory within a few days. Cotton waste is already arriving. The former superintendent, Thomas Kenneally, will take charge.

—*Massachusetts, Methuen. It is reported that operations would probably be resumed after Labor Day, in the Methuen Cotton Mill, which has been closed since June.

—*Massachusetts, Taunton. The Elizabeth Poole Mills have been put in operation after a shut down of more than two months.

—*New Jersey, New Brunswick. Operations will be started in about a week in Johnson & Johnson's new cotton mill at this place.

—*New York, Newburgh. Work has been started in Seward & Lackey's lace factory. The complete machinery equipment has not yet been installed, but the machines already in place are being operated.

—New York, New Hartford. The New Hartford Cotton Mfg. Company's mill will be shut down the first two weeks in September for repairs.

—*North Carolina, Clayton. Operations have begun in the new plant of the Clayton Cotton Mill. This company manufactures yarns, operating 5000 spindles. Ashley Horne is president, L. D. Debham, secretary and treasurer, and A. J. Rose, superintendent.

—*North Carolina, Concord. The Coleman Manufacturing Co. has started its plant. This mill uses colored help entirely, with the exception of the overseers.

—*North Carolina, Concord. The addition to the dyehouse of the Odell Mills, reported in November, 1900, has been completed. These mills, which have been shut down, started last week on full time. The Cannon Manufacturing Co. now contemplate making additions to their plant.

—Pennsylvania, Chester. The Powhattan Mills started last week, after a shut down of almost a month.

—*South Carolina, Rock Hill. The Chicora Cotton Mills have been overhauled, and will shortly start their 7000 spindles and 200 looms. I. S. Cohen is president. This company will operate the property, as previously reported, of the defunct Crescent Cotton Mills.

—Tenessee, Columbia. The Columbia Cotton Mill Co.'s plant, which has been closed for repairs for several weeks, has started.

—*Tennessee, Trenton. Operations have been resumed in the Trenton Cotton Mills.

Mills Shutting Down.

—Alabama, Florence. The Cherry Cotton Mills have been shut down for three weeks for vacation and repairs.

—Massachusetts, Lawrence. The regular summer shutdown of the Pacific Mills will begin August 24, continuing for one week.

—Massachusetts, Lawrence. The Pemberton Mills will close on the 17th inst., for a period of two weeks, during which time repairs and improvements will be made.

—Texas, Denison. The American Cotton Spinning Company's plant has been shut down temporarily, or until the new cotton crop comes in. It is also reported that the concern will be reorganized.

Woolen.

New Mills.

—Maine, Stetson. A subscription of $2500 is said to have been raised here to go toward the capital stock of a corporation to engage in the manufacture of woolens. The interested parties propose to erect a three-story mill, 45 by 100, large enough for 4 sets.

—New Jersey, Wallington. James H. Hennesey, shoddy and waste dealer of New York City, whose home is in Garfield, N. J., near here, is understood to be arranging to build a new woolen dress goods mill in this place, which is a suburb of Rutherford. Plans for the new plant are still incomplete, but rumor says that the ground will probably be broken in August or September.

—*New York, Albany. Work is progressing on construction of the new brick mill for the Albany Felt Co. Concern expects to occupy same during the winter.

—Oregon, Roseburg. Hon. D. S. K. Buick has been in correspondence with parties who think of locating a woolen mill in this place. The enterprise will be assured, provided a subscription of $8000 of stock can be raised in or about this place.

—Pennsylvania, Columbia. Land between Second St. and the railroad has been bought by William G. Case, who expects to build a fair sized woolen plant.

—Pennsylvania, Downington. It is reported that the old woolen mill at this place, which has been idle for so long, has been purchased by Messrs. Souls & Sons, who will put the same in operation. As soon as new and modern machinery has been put in place, the plant will be started up making woolen goods.

—*Rhode Island, East Greenwich. The new mill to be established here for manufacture of woolens will be known as the Rhode Island Worsted Company. Company has capital stock of $40,000. Daniel N. Brown, J. D. Reilly and J. H. Lee are interested.

—*Rhode Island, Harrisville. The new company reported as having leased a mill at Whipple Station (P. O. address Oakland), will operate under name of the Hope Worsted Mills. Frank Fiske is agent and buyer of the concern and Arthur Ames, superintendent. They will sell goods direct, running 22 looms.

—Rhode Island, Woonsocket. The Lorldan Worsted Company, which recently purchased a site on Villa Nova, will build a new mill, 115 by 77 feet, two stories high. The machinery will be removed from the plant in Providence to the new mill, when that is completed. Four pairs of spinnig mules will be installed. It is expected to have the plant ready to start operations during the fall.

—*Rhode Island, Woonsocket. It is reported that the Guerin Spinning Co. will probably complete building the new mill, foundation of which they started last year, but postponed erection on account of frost and subsequently the condition of the yarn business. The new plant will be used for scouring, sorting and picking machinery, leaving the present plant to be supplied with additional machinery for manufacturing yarn exclusively.

—Texas, Del Rio, Val Verde Co. Kellar & Van Dunker, of this place, are

about to establish a woolen mill, and are interested in receiving information on the subject of machinery and supplies.

—*Texas, Houston Heights. Work has been completed on the new plant for the Oriental Textile Mills, which will manufacture camel's hair and mohair press cloth. Concern is capitalized at $100,000, with Samuel E. Allen, president and manager.

—Washington, Seattle. A meeting of citizens was recently held to consider a proposition for the establishment of a large woolen mill. A proposition has been made by some Australian capitalists to invest money in such an enterprise provided Seattle citizens will also subscribe. They propose manufacturing blankets and men's wear. A committee of which J. A. Moore is chairman and H. G. Stoelting, secretary, has been appointed to investigate and report.

—Wisconsin, Kenosha. L. Carr, of Dubuque, Ia., is interested in locating a cotton and woolen mill at this place and has petitioned the council to make some inducements.

Enlargements and Improvements.

—*Connecticut, Seymour. The Tingue Manufacturing Co. have ordered a portion of the new machinery referred to in July.

—Connecticut, Stafford Springs. The Forest Mills, T. F. Mullen & Co., proprietors, have been closed for repairs and installation of a new power plant.

—*Connecticut, Thompsonville. The new tapestry mill of the Hartford Carpet Corporation is to be 860 feet long. Ground has already been broken, and a portion of the wall erected.

—*Connecticut, Thompsonville. The brick work of the Hartford Carpet Company's second new mill has been completed and the building is being roofed over. The machinery is being removed from the old filling mills to the new one. They have also started work on the building on Pleasant Street, which will be about 950 feet long and known as the tapestry mill.

—Georgia, Atlanta. A prospectus has been recently issued by Mr. R. H. Jones of the Atlanta Rug Mills. They will try to raise capital for a large plant with a capacity sufficient to meet the increased demands of their customers.

—*Indiana, La Porte. Work has been started on erection of the new mill for Samuel Fox's Sons. They contemplate having the new building ready for operations early in November. Other extensive additions are also under consideration.

—Indiana, Mishawaka. The Mishawaka Woolen Mfg. Company's mill, which has been shut down for two weeks, during which time repairs and improvements were made, has been started up. Two large compound Corliss engines and a 20 foot drive wheel were installed.

—Maine, Bridgton. The Pondicherry Company, which recently completed extensive improvements and additions to the plant, will expend about $15,000 more.

—Maine, Gardiner. William Harvey & Sons, operating the Gardiner Shoddy Mill, contemplate making additions to the plant, and may install more machinery.

—Maine, Readfield. The Nawoc Woolen Mills, Wm. Harvey & Son, proprietors, which have recently enlarged the spinning department, are making preparations to install more machinery, probably including some looms.

—*Maine, Skowhegan. The Marston Worsted Company has secured the lease of the Lakeside Worsted Co.'s mill for a period of two (2) years. Company contemplated moving the plant to another locality for purpose of increasing the floor space, but have taken above measures instead.

—Maine, Springvale. Plans have been made for the erection of an addition 110 by 58 feet, two stories, to the weaving department of Maine Alpaca Company's mill.

—*Massachusetts, Holyoke. The Farr Alpaca Co. have awarded contracts for two more big buildings. They also intend adding three new boilers, and have placed a contract with the General Electric Co., for a 7000 electric power plant.

—Massachusetts, Lowell. Contract for a large 2-story building has been awarded by the Bay State Mills of the American Woolen Co. This addition will be used for a coal shed and storehouse. It will be large enough to hold 8000 tons of coal.

—Massachusetts, Millbury. The Bowden Felting Mills Co. expect to increase the capacity of their plant by the addition of some new machinery.

—Massachusetts, Plymouth. An addition, 40 by 50 feet, is under construction for Geo. Mabbett & Sons.

—Massachusetts, Rochdale. Work has been started toward building a new bleach house for E. G. Carlton & Sons, manufacturers of flannels.

—Missouri, Carthage. The Carthage Woolen Mills shut down last week for extensive repairs. The company expects to install new machinery, and the mills will probably be closed for a month.

—New Hampshire, East Rochester. Operations have been started up in the dye house of the Cocheco Woolen Manufacturing Company, after a shut down of two weeks, during which time new floors have been laid and some additional machinery installed.

—*New Hampshire, Union. Arthur L. Taft, who recently purchased the Union Woolen Mill, informs us that he will not enlarge the plant, but is installing a new Stewart boiler and will replace a few of the old machines with new ones.

—New Jersey, Hightstown. The Hightstown Smyrna Rug Company has leased the old shoe factory building and will install 50 looms in same, increasing their operating force with about 60 more people.

—Pennsylvania, Reynoldsville. Machinery is being installed for the shirt and pants department started in the Reynoldsville Woolen Company's plant.

—*Rhode Island, Harrisville. The new mill under construction for William Tinkham & Co. will be 80 by 40 ft., three stories high.

—Rhode Island, Lymansville. Contracts for the power house for the Lymansville Mill have been let.

—Rhode Island, Pascoag. A. L. Sayles & Sons will install 26 additional looms in their mill, which has been running overtime for the past week.

—Rhode Island, Woonsocket. The Dunn Worsted Mills have let contract for the erection of a new mill, about 80 by 215 feet, one story, with saw tooth roof, in addition to their present plant. Plant is to be equipped with 50 looms, for making piece dyes exclusively, while the old mill will be devoted to manufacture of fancies.

—*Virginia, Buena Vista. The Buena Vista Woolen Mills, recently purchased by C. N. McLean of Philadelphia, will run on full time with its present amount of machinery. Mr. McLean expects to increase the production within a short time by an addition to the plant.

—West Virginia, Martinsburg. It is reported that the Crawford Woolen Co. will make enlargements to its plant.

Mills Starting Up.

—Connecticut, Stafford. The Riverside Woolen Company at this place, which has been shut down for summer vacation, is starting up again.

—*Iowa, Nashua. The warp is being put into woolen mills of J. W. Bowen, and he will start weaving blankets within the next two weeks.

—*Kentucky, Louisville. Operations have been resumed in the Louisville Woolen Mills, which have been closed on account of over-production and lack of orders.

—Maine, Madison. The Indian Spring Woolen Mill has been obliged to suspend operations in its spinning room, owing to a strike. This also effects the night work.

—Massachusetts, Dalton. The Dalton Woolen Mills have started again after their shut down for repairs. They have raised the main building one story.

—Massachusetts, Franklin. William M. Brown, lately boss weaver at the American Woolen Co.'s mill, has taken a lease of Enoch Waite's shoddy mill at South Franklin, which he expects to run as a shoddy mill, and later will weave blankets.

—Massachusetts, Lawrence. The Butler Worsted Co., which has been closed for some time, is running full.

—*Massachusetts, Lawrence. Operations have been resumed in the Globe & Prospect Mills recently secured by the American Woolen Company. The former operatives and overseers are being taken back as far as is possible.

—*Massachusetts, Lowell. The Middlesex Mills will resume operations next week, after a shut down since early part of August.

—Massachusetts, Lowell. A report is again in circulation that the Merrimack Woolen Mills at the Navy Yard may soon start under the management of Herman Adler, who represents the New York stockholders, holding controlling interest, and is also a nephew of the late S. Bachman.

—Massachusetts, Rochdale. The Rochdale Woolen Mills started up this week after a shut down of over a month. Extensive improvements have been made on this plant during this period.

—Massachusetts, Worcester. The Ramshorn Woolen Mills will start on full time this week.

—Massachusetts, Worcester. The Stoneville Mills, owned by William J. Hogg & Son, have started their spinning department on yarns for the Worcester Carpet Co., in order to help out the spinning department of the carpet company's plant, which is not able to supply the demands of the company. After Matthew J. Whittall comes into possession of the Worcester Carpet Co.'s mills, the Stoneville Mills will probably continue to run.

—*New Hampshire, Hinsdale. Work has been started on repairing the Amidon Woolen Mill, and it is expected that the plant will be in running order early in October.

—*New Hampshire, Rochester. The mill mentioned in our last issue as the Norway Plains Mfg. Co. is to be known as the Rochester Woolen Co. H. H. Groves, of Hudson, Mass., is one of the owners, and will be the manager. Herman Clark, son of Chas. E. Clark, is the office man of the firm. Orders have been placed for six new looms and new finishing machinery. The company expect to purchase more new looms in a short time. Will manufacture satinets. It is an 8-set mill.

—New Hampshire, Union. The Starr Mill has been bought by A. L. Taft, who expects to build an addition to the weave room and make extensive repairs. He will probably employ 75 hands when the mill is put into operation.

—*New York, Dryden. Repairs are nearly completed on the Dryden Woolen Mill, recently secured by Messrs. Spiegel & Doxey and operations started this week. New floors have been put in the picker building and the ground floor of the main building is new. They contemplate installing a dynamo for purpose of lighting the mill with electricity.

—*Ohio, Piqua. The F. Gray Woolen Mill Company's plant, which has been recently sold, will be operated by a new company known as the "Orr Felt & Blanket Company." General W. P. Orr is president; A. M. Orr, vice-president; Stanhope Boat, treasurer, and G. L. Marble, secretary. Extensive improvements will be made to the mill.

—*Pennsylvania, Indiana. Operations have been started on a small scale in the new plant of the Indiana Woolen Mill Co. The plant will be running to its full capacity in about two weeks.

—*Pennsylvania, Woolrich. John Rich & Bro. have started operations in their

mill and expect to have all the machines placed and ready to start in about three weeks.

—*Rhode Island, Waterford. Work has been resumed with a rush at the Saranac Mill during the week. It is expected that all the looms (250) will be running before the end of the week.

Mills Shutting Down.

—California, San Francisco. The Golden Gate Woolen Mills shut down on the 1st of August for some time. Everything is at a standstill in San Francisco through machinists' and teamsters' strike, and all the enterprises are seriously crippled.

—*Connecticut, New London. The New London Steam Woolen Mill is shut down, operations having been suspended for the past three months.

—*Connecticut, Norwalk. The Fairfield Worsted Mills are expected to shut down indefinitely in about 10 days, when it is expected that the concern, at least under this name, will give up business on account of differences between partners, although there is some chance of reorganization.

—*Massachusetts, Great Barrington. It is reported that the Sheridan Woolen Mills, Hugh Sheridan, manager, will be shut down soon.

—Massachusetts, Lowell. The shutdown at the Middlesex Mills will last for two or three weeks, or, at least, until such minor repairs as are necessary shall have been consumated.

—Massachusetts, North Dana. Crawford & Tyler's mill has been closed for purpose of making improvements to the mill and dam.

—Massachusetts, Uxbridge. The Calumet & Hecla Mills have been shut down today and will resume operations Tuesday, Sept. 3d. Necessary repairs will be made to the mill boilers during the shutdown.

—Massachusetts, Uxbridge. Operations have been suspended for about a week in Richard Sayles & Co.'s mill, on account of wrecking of the engine, caused by a breaking in the main shaft crank.

—Rhode Island, Ashaway. The Ashaway Woolen Co.'s No. 2 mill, known as the Bethel Mill, has run out of stock, and shut down indefinitely. The organization has been disbanded.

—Rhode Island, Niantic. A. Burdick's mill, for making shoddy and yarn, is not in operation.

—Rhode Island, Slocumville. The Yawgoo Woolen Company's mill is not running.

Knit.

New Mills.

—*Alabama, Athens. The walls are being put up on the new buildings for the Limestone Hosiery Co., about which details have been previously given.

—*Alabama, Birmingham. The Birmingham Hosiery Mills, incorporated recently, have let contract for their plant. Joseph A. Yates and Louis Miner are interested in these mills.

—*Indiana, Huntingdon. We learn that the plan for the establishment of the new knitting mill here by the Huntingdon Knitting Co., has been abandoned owing to disagreement among the interester parties.

—*Massachusetts, New Bedford. Contract has been let and work started on foundations of the new hosiery mill to be erected for the Cornell Stocking Company. They contemplate having the building ready for occupancy by December.

—*Massachusetts, Taunton. We have been advised that the report of new knitting mill to be erected here is rather premature as there as been nothing further done regarding same, than talk.

—*Michigan, Owosso. Ground has been broken for the erection of the new knitting mill for the Burnett Knitting Company.

—New Jersey, May's Landing. The Isaac Aaron property has been purchased by A. M. Bonis, real estate broker, who will convert it into a plant for making knit underwear. It is reported that employment will be furnished to about 125 people.

—New York, New Brighton. The Staten Island Underwear Company has been incoroprated by Mayer Rosenholz (New Brighton), Solomon Weil and J. S. Lewis (New York City), with capital stock of $8,000.

—New York, New York. D. J. Bowman operates a small knitting mill at 1110 E. 169th Street, making women's black and mercerized hosiery, operating 6 knitting machines. Goods are sold direct.

—New York, Oneonta. Buckley Bros. Co. is a new concern recently formed with capital stock of $41,000 to manufacture underwear.

—*New York, Sidney. The new knitting mill to be started up shortly and about which previous mention has been made, will be known as the Imperial Knitting Mill Company. Hon. James R. Baumes is interested in the company. Foundation has been completed and it is hoped that the building will be ready early in the fall.

—North Carolina, Chapel Hill. W. R. Lloyd, T. J. Hogan and others are reported interested in establishing a hosiery mill here.

—*New York, Utica. The Richelieu Knitting Company, previously reported as incorporated with capital stock of $25,000, informs us that they will begin production of goods September 1st. The mill, of which Chas. A. Byington is president; Geo. A. Frisbie, treasurer and W. J. McQuade, superintendent, will manufacture cotton, lisle, silk and mercerized ladies' fine ribbed underwear. Plant will have equipment of 25 knitting machines, using electric power.

—*North Carolina, Shelby. The Lura Knitting Mills established here by C. M. Lattimore and Orlando Elam are running. The mill is equipped with full au-

tomatic machinery for making women's hosiery and men's half hose, with present capacity of 100 dozen hose per day.

—*North Carolina, Waco. The Waco Knitting Mill expects to be ready to start production of goods (hosiery) in about a month. The building is 34 by 60 feet, one story and basement and as previously reported will be equipped with 25 knitting machines.

—North Carolina, Winston. It is reported here that L. A. Vaughn of this place will start another large hosiery mill.

—*North Carolina, Winston. We learn from J. W. Hanes, that he is in the market for practically the entire equipment of his new knitting mill, including the dye house. He will use the National Automatic knitting machines, but much of the auxiliary machinery, power transmission, etc., has yet to be bought.

—*Ohio, Barnesville. There is some talk here of rebuilding the Barnesville Hosiery Co., which was recently destroyed by fire.

—Pennsylvania, Andersonburg. A. B. Couch, who has only recently established a mill at this place, called the Perry Kniting Mill, is now talking of removing it to Blain. He makes seamless cotton half hose, and has about 25 machines. A new factory, 30 by 75, will be erected, which will give additional facilities, which will probably soon be required.

—*Pennsylvania, Mifflintown. The new mill of the Mifflintown Hosiery Mills started this week. This replaces the burned plant, which we reported in April.

—Pennsylvania, Orwigsburg. J. Heisler and N. H. Moyer are said to be interested in the erection of a new knitting mill at this place.

—*Pennsylvania, Reading. The new hosiery mill under construction for A. M. Weber, is nearly completed and operations will be started as soon as machinery equipment has been installed. About 100 people will be employed.

—*Pennsylvania, Spring City. Urner & Co.'s addition to their hosiery mill will be a five story brick building, 70 by 80 feet, and a brick stack 80 feet high. The equipment will consist of over 200 knitting machines, electrical power machinery, automatic sprinklers, etc. A large office will also be newly furnished.

—South Carolina, Bowling Green. A project is on foot by G. D. Flanagan, R. M. Dulin and R. T. Smith, to organize a company with capital stock of $12,000 to build and operate a knitting mill. Nearly $7000 has been subscribed toward the enterprise.

—South Carolina, Langley. George Sweringen is interested in the new hosiery mill project for this place.

—Tennessee, Winchester. The parties interested in the Town Creek Woolen Mills desire to establish a knitting mill inconnection with their business, and are now looking up information in regard to the matter, and would like to correspond with builders of knitting machinery, and are also looking for a good man to take charge of the plant. R. B. White, Winchester, Tenn., is the man to be addresse.

—*Utah, Ogden. We learn that the new knitting mill reported under Salt Lake City, in our issue of July 5, is to be located at this place, and is to be known as the Ogden Knitting Factory. Peter Anderson, Joel Ricks and Alma Williams are interested. Joel Ricks is the superintendent. They will make union suits and all kinds of hosiery, and will start early in August, operating about eight or ten machines, selling direct. They are still in the market for some knitting machinery and an electric motor, and have yet made no arrangement for their yarn supply.

—Virginia, Alexandria. The Alexandria Hosiery Co., a new concern, capitalized at $10,000, of which William Schwarzman is president; Arthur Schwarzman, vice-president; John Schwarzman, treasurer, and Samuel Stokley, secretary and general superintendent, has purchased a large tract of land from the C. C. Smoot & Sons Company, and will erect and operate a hosiery mill. A dye house will be added later.

Enlargements and Improvements.

—Connecticut, Bristol. Contract has been let by the Bristol Manufacturing Co., for the erection of an addition to their plant. The new building will be about 60 by 150 feet, two stories high.

—Georgia, Marietta. The Marietta Knitting Company is reported to install 17 additional machines in the plant.

—Indiana, Fort Wayne. The Wayne Knitting Mills are having a large addition built to the plant. The company recently increased the capital stock.

—Massachusetts, Chicopee. We understand that a new building will be erected for the Russell nKitting Co. on South St., for which contract has already been let.

—New York, Oriskany Falls. Hathaway & Reynolds have purchased the Langley Mill property on Broad Street, from the Utica Knitting Co., and will remodel same for dwelling houses. The machinery is to be removed to the Hathaway & Reynolds mill.

—*New York, St. Johnsville. The Union Knitting Co., manufacturers of men's derby ribbed underwear, are finding their present facilities taxed to such an extent that there is some possibility of their building an addition. The Royal Knitting Mills, which are obliged to vacate the place they now occupy, as previously reported by us, are building a new mill.

—New York, Utica. The Elbouef Knitting Company has completed the erection of an addition, 30 by 40 feet, three stories, to its plant. Capacity of the mill will be increased as the business calls for.

—*New York, Utica. The Fort Schuyler Knitting Company expects to be located in its new building, now under construction, about October 15th. The plant, which manufactures ladies' and misses' fine underwear, and equipped

with 22 knitting machines, will probably be increased in new location, as there will be ample space.

—*North Carolina, Enfield. The Enfield Knitting Mill, which has a capacity of 110 dozen pairs of hosiery per day, expects to double the number of its knitting machines shortly.

—North Carolina, Littleton. The Littleton Hosiery Mills contemplate increasing the plant.

—North Carolina, Scotland Neck. The Lockland Knitting Mills have been shut down for a week or two, in order to do some repair work and make an enlargement to the plant.

—Ontario, Petersborough. The Port Hope Knitting Works will increase the capacity of their plant. They have already secured additional floor space in a vacant building owned by the Bank of Montreal.

—Pennsylvania, Norristown. Extensive enlargements and improvements will be made to Lewis Taubel's hosiery mill. The main building will be extended to the pavement at Arch Street and an addition built in the rear to the edge of the lot owned by Mr. Taubel.

—*Pennsylvania, Philadepiphia. The large brick addition which Thomas Buck & Co., hosiery manufacturers, have added recently, is completed. The old plant at Third and Cumberland Sts., will be removed to this new mill. They expect to employ about 800 hands when they start in the new factory.

—Pennsylvania, Plymouth. Thomas West, who operates the Wyoming Valley Knitting Mill, contemplates the erection of another plant large enough to give employment to about 300 girls.

—Pennsylvania, Schuylkill Haven. Reed & Leininger are starting a dyeing and bleaching plant in connection with their mill.

—*Pennsylvania, Spring City. Work has been started upon the masonry of the addition to Urner & Co.'s mill.

—Rhode Island, Pawtucket. The Lebanon Mill Co. has awarded a contract to build a 3-story brick mill not far from their present building. There will be a separate building for the engine and boilers. The dimensions of the main plant are 147 feet by 52 feet. The company will remove from their present location, and expect to occupy the new buildings by the 1st of January. This concern manufactures yarns and knit goods.

—*South Carolina, Jonesville. The contract for the steam power plant of the Jonesville Knitting Mill was let last week to the Greensboro Electric Co., of Greensboro, N. C.

—*Tennessee, Knoxville. The Standard Knitting Mills Company has recently increased the capacity of the plant, by installation of six additional knitting machines.

—Wisconsin, Milwaukee. The Wisconsin Knitting Works have increased their capital stock to $30,000.

Mills Starting Up.

—*Connecticut, New Britain. The New Britain Knitting Co.'s mill started this week, after a shut-down of something over a month.

—New York, Cohoes. The Cascade Mills, which have been running short time for several months, have started operations on full schedule.

—*Pennsylvania, Lyons. Madeira & Warner's new knitting mill will probably start by the middle of August. The boiler and machinery are being installed now.

—*Virginia, Norfolk. Operations have been resumed in the carding, spinning and finishing departments of the Powhatan Manufacturing Co.'s mill, recently closed on account of the concern's finances.

—Wisconsin, De Pere. The Oneida Knitting Co., incorporated in May, is getting our samples. They will install three more knitting machines shortly.

Mills Shutting Down.

—Connecticut, Waterville. The Welch Hosiery Co. is reported to be contemplating in new boilers. The plant will shut down during this period, which will not cover more than two weeks.

—New Hampshire, Manchester. The Elliott Manufacturing Co. has closed its mill on account of slack work.

—New York, Schenectady. The Alpha Knitting Mills have shut down for the present, until sufficient orders are received to warrant starting again.

—New York, Waterford. The Novelty Knitting Underwear Company has closed its mill for a week. Necessary repairs will be made to the plant during shut down.

—North Carolina, Tarboro. The Runnymede Hosiery Mills have been shut down. During idleness a general cleaning will be made at the mills and additional machinery installed, which will nearly double the present capacity of the mills.

—Pennsylvania, Schuylkill Haven. H. Berger & Son's knitting mill has shut down for a few weeks.

—*Virginia, Norfolk. Operations will soon be suspended in all the departments of the Powhattan Knitting Mill, recently put in partial operation, until negotiations reported to be under consideration are completed. It is thought that the mill will be idle for only a few weeks.

Silk.

New Mills.

—*Maryland, Hagerstown. Frederick G. Burger has been awarded contract to erect the new silk mills for Collinge, Nolan & Co., by the Merchants' and Manufacturers' Association. The building will be of brick, three stories high, like the plant destroyed by fire. It is expected that work will be completed ready to start manufacturing by December 1st.

—*Michigan, Belding. The new mill under construction for Belding Bros. is expected to be ready for production of goods by January 1st., 1902.

—*New Jersey, Paterson. The Mayhew Silk Manufacturing Co. has now been organized with an authorized capital stock of $50,000. Francis H. Mayhew, John J. Buckley and Ray E. Horton are the stockholders. This is the plant established here recently by F. H. Mayhew, formerly at Wortendyke, and also operating a plant at Altoona, Pa.

—*New Jersey, Paterson. The Coronet Silk Manufacturing Company, a new corporation, has secured the lease of the Hamil Mill property, with privilege of purchasing same.

—New Jersey, Woodbury. It is reported that a large silk company has decided to locate the plant here if the citizens would loan about $30,000 or $40,000 in bonds at 4 per cent., as the company has been offered a site by an individual of the town. It is proposed to erect a mill 50 by 200 feet. Company which is operating a plant finds it necessary to enlarge same and thereby need new site.

—New York, Silver Creek. The Hammond-Homberger Co., of Silver Creek, has been organized to manufacture and deal in bolting cloth and silk goods. The capital is $45,000. The directors are: C. G. Hammond, S. Annette Hammond and A. B. Chepman, of Silver Creek.

—*Pennsylvania, Alburtis. The Hartley Silk Mill, which was destroyed by fire and reported to be rebuilt, will be replaced with a large brick structure instead of frame as was the previous plant.

—*Pennsylvania, Altoona. Operations have been started in all the departments of the Juniata Throwing Company's mill, located in building vacated by Schwarzenbach, Huber & Co.

—*Pennsylvania, Hazleton. The Duplan Mill will erect within the next year a three story throwing plant, 60x300 feet. This addition was recently referred to by us as a new silk mill.

—*Pennsylvania, Pottsville. The new velvet factory of Messrs. Leib & Miller is located in the Good Will Engine House. Looms from Germany are already being installed.

—Pennsylvania, Slatington. A German concern of Langenburg, viz., Couze & Colesman, silk dress goods manufacturers, are reported to be contemplating the erection of a branch plant here.

—*Rhode Island, Valley Falls. Work is being pushed on construction of the new buildings for Reiling, David & Schoen, of West Hoboken, so that part of the weave shed may be ready for use by November 1st, when operations will be begun. The main building will be 176 by 648 feet, 3 stories, in which the winding and warping will be done. The head house to the weave shed will be 202 by 28 feet, 2 stories. Upon the first floor will be offices, shipping and dressing rooms, with picking and inspecting on the second. The weave shed will be 203 by 205 feet, 2 stories, and will have an equipment of about 600 looms, as previously reported. The boiler house and engine house will be 41 by 43 and 61 by 28 feet, respectively. All the buildings will be of slow-burning construction.

Enlargements and Improvements.

—*Connecticut, So. Manchester. Work has been started on construction of the two new mills for Cheney Brothers. Each plant will be about 350 by 80 feet, three stories, and used for manufacture of velvet.

—New Jersey, Paterson. A large addition, contract for erection of which has been let, will be built for the Jacob S. Weidman Silk Dyeing Company. The capacity of the mill will be greatly increased.

—*New York, Hornellsville. The Steuben Silk Company, which was previously reported to manufacture silks in addition to veilings, informs us that they will operate a total number of 85 looms, making taffetas, peau de soi, satin and veilings.

—*Pennsylvania, Newberry. A number of new looms have been added to the equipment of the Lycoming Silk Mills and the capacity of the mill will be greatly increased.

—*Pennsylvania, York. The Diamond Silk Mills have just completed installation of six new machines in the plant.

Mills Starting Up.

—*New York, Cohoes. Operations have been resumed in the Victor Knitting Mills, which were closed for two weeks.

—Pennsylvania, Plymouth. The Templeton Knitting Mill, which has been idle for about eleven weeks regarding misunderstanding as to wage schedule, is now running.

Mills Shutting Down.

—New Jersey, Paterson. The plant of the Johnson & Cordin Co., weavers of silk goods, is closed on account of a strike.

—New York, Delhi. The Delhi Silk Mill has been shut down for the past two weeks awaiting the decision in the injunction suit. It is stated that the mater will soon be determined.

—New York, Sidney. Owing to summer vacation, the silk mill here is closed, but will start up again about the middle of August, and will probably require a force of 50 more hands by the 1st of September.

Miscellaneous.

New Mills.

—*California, Oakland. The California Flax Mills are now in operation. Details have been previously reported.

—*Georgia, Augusta. The plant of the Clear Water Bleaching & Manufacturing Company is being placed in operation. Dennis McElroy, formerly with the Dunnell Print Works, will have position of foreman of the bleaching department and take charge of installing considerable of the modern bleaching machinery.

—*Massachusetts, North Dighton. The roof is being put on the building recently

enlarged by the Mount Hope Dyeing & Bleaching Co. The machinery is being set up and efforts are under way to start the plant early in the fall.

—*Massachusetts, Whitman. A late report states that most of the machinery for the American Linen Fibre Company's mill is ready for shipment. Most of the room will be utilized for the manufacture of the fibre for the present, and that the other machinery will be installed later.

—Pennsylvania, Philadelphia. The Westmorland Dye Works is the name of a new concern at 1919 Westmorland St., Joseph Richardson, proprietor. They dye worsted skein yarns and tops. Steam power.

—Pennsylvania, Philadelphia. W. C. Foulds, formerly of the Franklinville Dye Works, has established a new dye works in the building occupied by Moore & Co., Allegheny Ave. and Amber St., Kensington, Philadelphia. Machinery is being installed to dye wool, worsted, cotton and hosiery yarns. It will be known as the Dragoon Dye Works.

—Pennsylvania, Philadelphia. The Mascher Street Dye & Finishing Works is a new concern recently started at 2742-54 Mascher Street, with M. Morganstine, proprietor, and Theo. Morganstine, manager. They dye and finish all kinds of knit goods, woolens, blankets, robes and rugs.

Enlargements and Improvements.

—*Massachusetts, Dedham. The Merchants Dye Works, reported installing some yarn winding machinery, advise us that they now dye fast black cotton, raw stock carded or machined and are also adding a lot of new cotton cards, Saco & Pettee make.

—Massachusetts, Medford. The Glenwood Dye Works have awarded contract for a 2-story brick addition, 120 by 60 ft.

—Massachusetts, New Bedford. The New Bedford Cordage Co. have filed an application for permit to build an addition 20 by 30 ft. to their machine shop.

—*New York, Nyack. Operations have been started by the Peerless Finishing Company in their new quarters. They will build an addition, 40 by 80 feet, on the north side of the Wright Building.

—*Rhode Island, Valley Falls. The Naushon Co., operating mill formerly known as the Valley Falls Co., has leased about 70 looms in A. F. Knight's mill, operating same on colored work. Negotiations are under way for lease of the middle floor of the Glenark Knitting Co.'s Colchis Mill, where 50 looms will be installed to run on colored work also.

Fires.

—New York, Brooklyn. The Empire State Worsted Mills, 123 Middleton Street, Wm. Dubnitzki, proprietor, making fancy knit goods, were damaged by fire recently. The loss is estimated at $1000.

—New York, Fort Plain. Chas. Bailey & Sons' knitting mill was damaged by fire, which started in the carding room, to the extent of about $5000.

—North Carolina, Long Island. The cotton warehouse of the Long Island Cotton Mills was recently destroyed by fire.

—Pennsylvania, Attleboro. The cotton mill at this place, operated by Frederick Rumpf's Sons, has been totally destroyed by fire. The loss, estimated at $75,000, is partly covered by insurance.

—Pennsylvania, Chester. A loss of $1000 was incurred at the Chester Manufacturing Company's plant early this week by a fire in the picker room.

—Virginia, Petersburg. Fire, which visited the Petersburg Hosiery Company's plant, destroyed all the stock and badly damaged the machinery. The loss is partly covered by insurance.

Fact and Gossip.

—Canada, Hamilton. The Imperial Knitting Company has been incorporated with capital stock of $40,000 by James Rolston, T. F. Haskins, W. F. Haskins, J. W. Stingsby and others of Dunnville.

—Canada, North West Territory, Edmonton, West. This town was understood to have granted a bonus and an exemption from taxation for a term of years to J. W. Webster, Newport, Ont. If Mr. Webster accepts he will probably build a woolen mill.

—Colorado, Florence. D. A. Chenowith and Mr. Henry of the Model Woolen Mill, Indianapolis, Ind., are interested in locating at this place and have proposed that the town purchase a site costing about $3000 and subscribe for $25,000 worth of the capital stock.

—Colorado, Pueblo. It is reported that negotiations are now pending for the establishment of a woolen mill here by Eastern capitalists. It is proposed to manufacture only heavy goods, such as blankets.

—Connecticut, Danielson. The Chase Woolen Mill, at Elmville, is reported to have been leased by manufacturers interested in mills in Vermont. The mill will be repaired and operations started as soon as possible making men's wear.

—*Connecticut, Norwich. The new knitting mill established here by James B. Shanon, is now in full operation. Plant, under charge of Geo. T. Paquette, formerly of Woonsocket, R. I., has an equipment of 16 machines for making hosiery and capacity of 60 dozen per day. Additional machines will be installed as the business warrants so doing.

—Connecticut, So. Coventry. Mrs. S. A. Bottwin's interest in Bottwin & Armstrong's silk mill property, has been purchased by John A. Dady, of Putnam, who has operated the property for several years past, having leased the property. The firm will be known as Dady & Armstrong.

—Florida, Fort White. C. H. Thompson is getting prices on machinery for knitting underwear and hosiery, with a view to probably erecting some such plant.

—Georgia, Atlanta. R. L. Goodman, 611 Austell Building, is reported as interested in purchase of machinery for manufacturing lace curtains.

—*Georgia, Lawrenceville. W. L. Peel, of this city, has been appointed receiver for the Gwinnett Cotton Mills, in place of the temporarily appointed receiver, R. Winn Peoples. The receiver has power to purchase new machinery and supplies, and to operate the plant, should he think fit. It is rumored here that the mill will make another start within a few weeks.

—Georgia, Nickojack. The Concord Woolen Mills, Rice & Love, proprietors, have been incorporated as the Concord Manufacturing Company, with paid in capital of $25,000.

—Louisiana, Alexandria. Parties here are said to be interested in raising $30,000 required for the moving of an established cotton factory to this place.

—Maine, Fryburg. It is reported that a syndicate has bonded the water power at Swan's Falls, Hiram Falls and Steep Falls with a view to establishing woolen mills at these places.

—Maine, Madison. The Madison Woolen Company's mill is being operated with a night force, in the carding and spinning rooms.

—Maryland, Oella. A portion of the 5-story mill No. 1 owned by W. J. Dickey & Sons collapsed recently, pulling down the brick stack in its fall, causing a temporary shut-down. The loss will be considerable.

—Massachusetts, Adams. The Renfrew Manufacturing Co., which operated a small plant at Dalton, Mass., contemplates removing same to this place, where employment will be given to about 50 more people.

—Massachusetts, Adams. Graham, Clark & Co.'s mill was badly damaged by the flood which recently visited this place. About $60,000 worth of damage was done to the plant of the Berkshire Mfg. Co.

—*Massachusetts, Auburn. Work is being pushed on renovating the old Crossley Mill for Rosenberg & Sigel. Fred A. Lapham (Worcester) has been engaged as superintendent and has charge of the work in general.

—*Massachusetts, Easthampton. H. O. Wolfe, previously reported started manufacture of suspenders on a small scale, advises us that he has simply a sample loom and when not busy gets out a few samples of fine webs. He may, however, go into the manufacture of elastic webbing in the near future.

—Massachusetts, Fall River. The selling committee of the Fall River print mills has been formally dissolved. The mill management seem to consider that the competition in the open market will bring far better results. The mills represented at the meeting on Monday were: American Linen, Arkwright, Barnard, Border City, Durfee, Fall River Manufactory, Granite, Laurel Lake, Merchants, Metacomet, Mechanics, Narragansett, Pocasset, Richard Borden, Robeson, Shove, Slade, Stafford, Tecumseh, Troy, Union, and Weetamoe.

—Massachusetts, Lowell. It is expected that the reorganization of the Waukenhose Manufacturing Company will be completed about October, when concern will be known as the Waukenhose Company, with capital stock of $50,000.

—*Massachusetts, New Bedford. At a meeting held recently by the stockholders of the Dartmouth Mill Corporation, Charles E. Riley was elected president to succeed Rufus A. Soule and W. H. Langshaw voted to be re-instated as agent and superintendent of the plant.

—*Massachusetts, North Adams. The incorporation of the Johnson-Dunbar Mills Company, reported under Jersey City, N. J., in issue of August 23d, refers to consolidation of the Johnson Manufacturing Company and The Dunbar Mills Company, in order to simplify management of the concerns.

—Massachusetts, Pittsfield. There is a rumor current here that Alexander Smith & Son Carpet Co., of Yonkers, has obtained options on either the Barkerville or Pomeroy property. It is said that the concern requires new mills to meet its heavy orders.

—*Massachusetts, South Hadley Falls. C. Fayette Smith, one of the receivers of the Glasgow Mfg. Co., advises us that the report concerning starting of plant as a thread mill is premature. Although work is being done with that end in view it is far from being assured at the present time.

—Massachusetts, West Millbury. The Ramshorn Woolen Mill at this place has been leased by William Lowenthal, of Boston, Mass. The plant will be started up on a new line of men's suitings in medium grades. C. E. Hoyle, who has been operating the mill for the past year, will be retained as manager. It is also stated that the project of manufacturing men's and boys' suits is under consideration.

—*Massachusetts, Williamsburg. The Cook Mills at this place, have been purchased by G. M. Bradford.

—Michigan, Centreville. The co-partnership doing business under name of the W. Denton Company, has been incorporated as The Michigan Central Woolen Company, with capital stock of $50,000. Hugh P. Stewart is president; Frank Wolf, vice-president, and Frank S. Cummings, secretary and treasurer. John Donahue is superintendent. They will continue making the same class of goods.

—*Nebraska, Kearney. The Kearney Mill will be offered for sale September 9th under foreclosure in favor of the Union Savings Bank and Trust Company. H. C. Andrews is special master in chancery to conduct the sale.

—New Hampshire, Lakeport. It is reported that Dr. J. C. Moore is negotiating for an offer to start a hosiery mill.

—New Jersey, Bloomsbury. V. Y. Schooley is interested in securing a location for either a silk mill or knitting mill in this country.

—New Jersey, Bordentown. A petition has been entered in the United States Circuit Court to declare Frank Geyer,

manufacturer of Smyrna rugs, etc., a bankrupt, by the Boardentown Banking Co. The bank states having discounted notes to the value of $1,103.85, which have gone to protest.

—New Jersey, Paterson. The United States Twine & Net Co. has been incorporated with an authorized capital stock of $50,000, by William Barbour, Alfred R. Turner, Jr., Robert B. Symington, Henry C. Knox and Frank C. Gledhill. They will manufacture and sell threads, twines, yarns and nets of every description, having principal office at Paterson.

—New Jersey, Paterson. The Star Silk Company has been incorporated with capital stock of $50,000. The incorporators are: Israel Sapirstein, Phillip Bernstein and Abraham Schwable.

—New Jersey, Paterson. The Katterman & Mitchell Co. have filed articles of incorporation. The capital stock is $100,000, divided into 1000 shares of $100 each. Of these, August Katterman will take 500 shares; James Mitchell, 499 shares; Clara Mitchell, one share. This firm already operates two mills, and the papers filed merely change the concern from a partnership to a corporation. The mill in Paterson will be enlarged.

—New York, Albany. The G. A. Hubbard Manufacturing Company has been incorporated with captal stock of $40,000, to manufacture, buy and sell textile fabrics, with principal business at Loudonville. G. A. Hubbard, F. M. Hubbard, Charles L. A. Whitney and T. S. Davis are the incorporators.

—*New York, Cohoes. The water has been turned into the canal again and operations have been resumed in the mills affected by the stoppage.

—*New York, Kinderhook. The Columbia Knitting Mill Co. erected a new plant for the purpose and did not purchase the Kinderhook Academy property for same, as was reported in an earlier issue.

—*New York, Little Falls. John McCauley informs us that he has sold the Little Falls Mill to Porter & Rankin.

—New York, New York. The C. S. Davisson & Co. has been incorporated with capital stock of $75,000 by G. Davisson, C. S. Davisson and A. P. Davisson, to manufacture fabrics.

—New York, Phoenix Mills. It is stated that all the machinery in the carding and spinning departments of the Index Knitting Mills is to be taken out and the room, after being thoroughly remodeled, equipped with sewing machines, winders and knitting frames. It is thought that yarn can be bought cheaper than it can be made with the present machinery. Work on making the changes will be started in a few weeks and will be pushed to completion.

—New York, Unionville. A recent report states that there is a prospect of the mill formerly operated by Toner & Prescott being put in operation again.

—New York, Waterloo. The carding and spinning departments of the Waterloo Woolen Mills are being operated overtime on account of large orders.

—North Carolina, Cherryville. D. P. Rhodes has been elected to succeed J. M. Rhodes as secretary and treasurer of the Gaston Manufacturing Co. Mr. J. M. Rhodes will devote his interests to the Rhodhiss Manufacturing Co.

—North Carolina, Concord. At the annual meeting of the Lippard Yarn Mill, held recently, J. C. Lippard was elected president and J. B. Sherrill, secretary and treasurer. It is thought that the mill, which has been idle for several months, will be started up an early date.

—North Carolina, Elliott. It is reported that ex-Senator Marion Butler is to establish and operate a cotton mill at this place, having formed a company for the purpose.

—North Carolina, Hickory. We have been advised by Capt. J. M. Odell that nothing definite has yet been decided regarding the erection of the cotton mill here.

—North Carolina, Scotland Neck. Woodward & Jenkins' knitting mills, making hosiery, have been shut down.

—Ohio, Cincinnati. A petition has been filed in the Court by Wm. N. Rudy against William White for a dissolution of their partnership in the Novelty Dye Works. George M. Keefer has been appointed receiver of the plant.

—Ohio, Pandora. W. H. Love, owner of the Pandora Woolen Mills, contemplates removing the plant to Bluffton, Ohio, if inducements made are sufficient to warrant so doing.

—Pennsylvania, Bangor. Efforts are being made to induce a large silk manufacturing concern at Paterson, N. J., to remove to this place. It is thought the project will be successful.

—Pennsylvania, Clarksburg. Efforts are being made to secure the establishment of a branch of the Enterprise Silk Mills (Reynoldsville) at this place. The town has voted to donate grounds for the plant. D. W. McGeorge of Clarksburg is local agent for the company and will take charge of the preliminary affairs.

—Pennsylvania, Philadelphia. Schoon & Crabtree is a new firm, composed of A. E. Schoon and B. Crabtree. They have recently bought the worsted machinery in the mill at the corner of 21st and Naudain Sts., formerly operated by A. R. Elsasser, and will carry on a business of commission combers and spinners of worsted yarn.

—Pennsylvania, Philadelphia. The Frankford Hosiery Mills, Adams & Unity Street, were sold on the 14th inst., by S. T. Freeman & Co., 12th. & Walnut Streets, to Alfred W. Rafferty, for $35,500.

—*Pennsylvania, Pittston. The Sterling Silk Mills, referred to July 6th, will probably be removed to Paterson, N. J.

—*Pennsylvania, Pottsville. Thomas L. O'Donnell has been appointed trustee of the Schuylkill Silk & Plush Mill, with bond fixed at $20,000.

—Rhode Island, Bridgeton. Wm. H. Prendergast's mill has started a night force, owing to large orders.

—*Pennsylvania, Trainer. At a meeting held recently by the committee of creditors, a proposition was made by the Trainer company to pay 33 1-3 per cent. cash, subject to the acceptance of the creditors.

—*Pennsylvania, Slatington. Joseph Richards, treasurer of the Board of Trade advises us that work has not yet been started on foundations of the silk mill to be erected here. As the parties interested in the mill live in New York, nothing is yet known as to what will be manufactured.

—Rhode Island, Washington. The Moon Mill, which has been closed for several years, is reported as being leased by a company, who intend to use it for mercerizing cloth.

PERSONAL RECORD.

Cotton.

—R. J. Allsbrake, assistant overseer of spinning at the Rocky Mount Mills, Rocky Mount, N. C., has been promoted to the position of overseer of spinning in mill No. 2 of that company, to fill the vacancy caused by the promotion of Overseer Knight of mill No. 2 to mill No. 1, which latter was left vacant by the resignation of Overseer Rountree.

—George Bills, overser of carding in the Ann and Hope Mill of the Lonsdale (R. I.) Co., has been transferred to Mill No. 4 of the same company, succeeding John G. McFadden, who takes Mr. Bills' place at the Ann and Hope Mill. These changes have been deemed advisable because of extensive additions to the Ann and Hope Mill, involving additional overseeing care, with which it was thought best not to burden a man of Mr. Bills' age.

—W. E. Baggett, boss carder and spinner at the Estelle Cotton Mills, Selma, Ala., has resigned to become boss carder for the Jackson Fibre Co., Jackson, Tenn.

—George Bone has recently secured the position of overseer in the bag factory of the Harmony Mills, Cohoes, N. Y.

—J. L. Blair is superintendent of the Monaghan Mills, Greenville, S. C.

—J. D. Boseman has accepted the position of superintendent of the mill of the Goldvile Mfg. Co., Goldville, S. C. Mr. Boseman was formerly connected with mills at Mt. Holly and Charlotte, N. C.

—T. L. Curlee, of Charlotte, has returned to Burlington, N. C., to take charge of the carding department of the Aurora Cotton Mills.

—Morris Cogan has resigned as superintendent of the Beaver Dam Cotton Mils at Beaver Dam, Wis., the mill having stopped running, and accepted his old position of overseer of carding and spinning for the Canadian Colored Cotton Mills of Hamilton, Ont.

—T. A. Crowder has returned to Mobile, Ala., and accepted a position as overser of spinning at the Barker Cotton Mill.

—William T. Claytor, formerly of Huntsville, Ala., has taken charge of the Alabama Cordage Company at Montgomery, Ala., as superintendent.

—James Durkin, formerly second hand in the spinning department of the Algonquin Company, Passaic, N. J., has succeeded John Maher as overseer of spinning for that company.

—T. C. Davis, for some time past superintendent of the Fairchild Cotton Mills, Unionsboro, S. C., has resigned and gone to Newton, N. C.

—A. M. Davis, of Huntsville, Ala., has been appointed superintendent of the new Barton, Ark., "Barton" Mill, now in course of construction.

—G. A. Drew has taken charge of the weave room at the Caraleigh Mills, Raleigh, N. C. Mr. Drew was previously at the Whittenton Mills at Taunton, Mass.

—John Eddy, formerly employed at the mill of the Fall River Iron Works Company, Fall River, Mass., and more recently superintendent of a mill in New York, has accepted the overseership of carding at the Osborn Mills, Fall River.

—G. W. Etheredge, formerly of Abbeville, has accepted the position of superintendent of the Woodruff Cotton Mills at Woodruff, S. C.

—William Evans, formerly of Manville, R. I., has been elected treasurer of the Wampanoag Mills of Fall River, Mass.

—J. C. Foster of King's Mountain, N. C., has gone to Anderson, S. C., where he has charge of the spinning room and is assistant superintendent for the Cox Manufacturing Co.

—Nelson Guillotte, assistant superintendent at the Parker Mill, Fall River, Mass., with which he has been connected for six years, has resigned to take a position with the American Thread Company.

—Henry Glover, formerly superintendent of the Shrove Mill, Fall River, Mass., has accepted a position as superintendent of a mill at Cohoes, N. Y.

—Lee Gribbe has resigned as superintendent of the Goldville Manufacturing Co., Goldville, S. C.

—John Hathaway has resigned as superintendent of the National Flax fibre Co., Millis, Mass.

—Joseph Hamill, formerly of the May's Landing (N. J.) Water Power Co., is

meeting with very good success at the Ossipee Cotton Mills at Elon College, N. C., where he has been superintendent since November, 1900, having increased the capacity of the plant very materially. The mill makes cottonades, domets, shirtings, etc.

—Frank B. Hodges, for many years past superintendent of the Dunnell branch of the United States Finishing Company at Pawtucket, T. I., severed his connection with that concern recently.

—J. E. Hester of Adams, Mass., has recently accepted the position of overseer of carding with Seabury & Johnson, East Orange, N. J.

—B. E. Johnson, assistant overseer of spinning at the F. W. Poe Mfg. Co., Greenville, S. C., has been promoted to the position of overseer of the cloth room at that mill, to succeed J. E. Thompson, who resigns to go elsewhere.

—Edward Jones has been made one of the overseers of spinning at the Greenville, S. C., Mills, having resigned the position of assistant overseer of the Fountain Inn Mfg. Co., Fountain Inn, S. C., to accept the place.

—T. C. Lane, for several years overseer of the carding department of D. Trainer & Sons' mills Nos. 1 and 2, Trainer, Pa., has resigned to accept a similar position with the Hope Mills Mfg. Co., Hope Mills, N. C.

—E. J. Lover, who recently resigned as overseer of carding at the Walton Mills, Monroe, Ga., has been appointed to a similar position in the Newman Mill No. 2, Newman, Ga.

—E. J. Lovin has severed his connection with the Walton Cotton Mills, Monroe, Ga. His place is filled by J. D. Patton, who has charge of carding and spinning.

—John Malley of Philadelphia, has resigned as overseer of spinning for the Brookside Manufacturing Company, Lenni, Pa.

—Dennis McElroy, formerly foreman of the bleaching department of the Dunnell Print Works, Pawtucket, R. I., operated by the United States Finishing Co., has accepted a similar position with the Clear Water Bleaching & Manufacturing Co., at Augusta, Ga. This plant is just being placed in operation and Mr. McElroy will have charge of installing considerable modern bleaching machinery.

—James Monaghan has severed his connection as overseer of carding with the Pocasset Manufacturing Co., Fall River, Mass. Mr. Monaghan has held this position during the past ten years. He is succeeded by F. W. Bean, formerly overseer of carding with the Fall River Manufactory.

—Joseph McGowan recently resigned as master mechanic at the E. Jenckes Mfg. Co., Pawtucket, R. I.

—J. B. Meacham, formerly superintendent of the Norris Cotton Mills, Cateechee, S. C., has accepted a similar position at the Gonzales Cotton Mills, Gonzales, Tex.

—James Murphy, of New Bedford has been secured as overseer in the carding department of the Nashua Mfg. Co.'s mill, Nashua, N. H. Mr. Murphy will take the place occupied by Isaac Johnson.

—B. F. Nuttall, who recently resigned his position at the Springstein Mills, Chester, S. C., is now boss carder and spinner at the South Side Mfg. Co.'s mills at Salem, N. C.

—J. E. Osment has been made overseer of weaving at the Henderson, N. C., "Henderson" Mills, having ben promoted from the position of overseer of the winding room.

—W. E. Page has severed his connection as overseer of the cloth room with the Wayne Cotton Mills, Goldsboro, N. C.

—P. B. Parks has resigned as overseer of carding and spinning at the Cannon Manufacturing Co.'s mill at Cannon, N. C.

—J. H. Robinson, until recently superintendent of the Columbia Cotton Mills, Columbia, Ala., is now boss carder for the Bibb Mfg. Co.'s mill No. 2, Macon, Ga.

—T. A. Shipp, Jr., formerly superintendent of the American Cotton Spinning Company of Denison, Tex., is now employed at the Fulton Bag & Cotton Mills, Atlanta, Ga.

—William A. Saunders, formerly of the Odell Mills, Concord, N. C., has been secured by the Efird Mfg. Co., Albermarle, N. C., as overseer of spinning.

—J. E. Shaw, boss carder at the Union Cotton Mill, Union, S. C., will resign October 1st, to take the superintendency of the new Inman Cotton Mill, Inman, S. C.

—J. Scheirneir is the new superintendent of the Eufaula Mills at Eufaula, Ala.,

—J. W. Tines, who resigns as overseer of weaving at the Harmony Grove, Ga., mill, is succeeded by T. B. Murphy. Mr. Murphy was formerly connected with the Lindale, Ga., Mill.

—B. F. Tompkins, who has been overseer of spinning at Orangeburg, S. C., is now holding the position of boss carder and spinner at the Capital City Mills, Columbia, S. C. J. A. Gaines, formerly of the Union, S. C., Mills has succeeded him.

—P. D. Wade is the new superintendent of Pelzer Mill No. 4, Pelzer, S. C., in place of J. L. Blair, resigned.

—Thomas Weems, superintendent of the Eagle & Phoenix Mills, Columbus, Ga., has sent in his resignation to the management of that company.

—J. W. Watkins has been made overseer of the winding department of the Henderson Cotton Mill, Henderson, N. C., succeeding J. E. Osment.

—Samuel White, who has been connected with the Odell Mills of Concord, is now overseer of carding and spinning at the Clayton Coton Mill, Clayton, N. C.

—A. S. Winslow, who has been general superintendent of the Erwin Mills at Durham, N. C., for a year or two, resigned recently, and accepted the superintendency of a large mill in South Carolina. Mr. Winslow is a New England man, going to Durham about two years ago, first serving as overseer at the Erwin mill, and a short time after being promoted to superintendent.

—H. G. Wyman of Fitchburg, Mass., has been engaged by the Grant Yarn Co., of Fitchburg, as master mechanic.

—William Wood from Batesburg, S. C., has accepted a position as overseer of carding and spinning at night with one of the cotton mils at Lexington, N. C.

—J. M. Ward has left Gaffney, S. C., for Trough, S. C.

—M. J. Whitesides, formerly of Harmony Grove, Ga., is now with the Jefferson (Ga.) Cotton Mill.

—W. R. Young, secondhand of carding at the Lockhart Cotton Mills, Lockhart, S. C., has resigned to become boss carder at the Cowpens Cotton Mill, Cowpens, S. C.

—Business is very good at the Clinton Mill, Norwich, Conn., and the following is the staff of overseers: J. Ryan, weaver; J. Pierce, dyer; M. Tallas, carder; M. Ryan, weaver; J. Ryan, spinner, and J. T. Lyons, finisher.

Woolen.

—George E. Bidwell, who recently severed his connection with a Pennsylvania mil, succeeds Thomas T. Somerville as overseer of finishing with the Mount Beattie Manufacturing Co., Camden, Me.

—J. F. Brallier, for the past three years superintendent of the factory of the Piscataquis Woolen Co. at Guilford, Me., has resigned to become superintendent of the Dews Woolen Co. at North Dexter, Me., having recently purchased the interest of Charles Dews in the latter concern. The superintendency left vacant by Mr. Brallier will be filled by John Houston, a shareholder in the Piscataquis Company and formerly overseer of the dyeing department of the plant.

—C. N. Bagley, of Lowell, Mass., has engaged with the Jefferson Mfg. Co., Jefferson, Mass.

—T. J. Cusick of Clinton, has been engaged to take the place of T. J. Sheehan as boss carder at the Moosup Woolen Mills, Moosup, Conn.

—James A. Cameron, formerly of Providence, R. I., has accepted the position of superintendent of the Albany Woolen Mills, Albany, Ore., in place of W. A. Semple.

—James Cocroft of Blackinton, Mass., has become boss dyer for the Sterling Worsted Mills, Clinton, Mass.

—Edmund Dunkerley of Millbury, Mass., is now overseer of spinning in the Jamesville Woolen Mill, Worcester, Mass.

—J. F. Dustin has resigned as superintendent of the National Pile Fabric Co., Providence, R. I., and has been succeeded by Arthur Elson of Providence.

—Will Gilthrop, who recently resigned his position in Winsted, Conn., has accepted a position in Rawitser & Bro.'s mil at Staffordville, Conn.

—L. A. Houston, boss dyer at the Carleton Mill, Sangerville, Me., has resigned to accept a similar position at the Piscataquis Woolen Mill, Guilford, Me., in place of John Houston, who has been appointed superintendent.

—W. J. Higginson, Hinsdale, N. H., is the new boss weaver at the Hargraves Mills, North Shapleigh, Me.

—James Jourel has returned to his old position as boss spinner with the Hawthorne Mills, Glenville, Conn., which place he formerly held for ten years. Mr. Jourel has recently been with the Northern Ohio Blanket Mills, Cleveland, Ohio.

—Fred Orrell is now superintendent of the Glendale Woolen Co.'s mill at Burrillville, R. I., succeeding John T. Lloyd.

—Z. H. Parker of Ludlow, Vt., has recently accepted the position of boss finisher for the Camden Woolen Company, Camden, Me.

—S. M. Peterson is now employed as boss spinner by C. C. Groat, Greenwich, N. Y.

—Daniel Reardon has been engaged as dresser tender at the Dalton Woolen Mills at Dalton, Mass.

—Arthur N. Smith, for the past 33 years paymaster at the Blackinton Mills, Blackinton, Mass., severed his connection with the establishment recently. It is not known when the mills will be started again.

—At Davis & Brown Woolen Co., Killingly, Conn., H. C. Harford is superintendent; J. H. Fielding, spinner; Thomas Richmond, carder, and J. H. Winslow, weaver.

—At the French River Textile Co., Mechanicsville, Conn., F. Crook is superintendent; T. F. Smith, weaver; S. Newell, dyer; F. Clavin, carder; A. J. Cox, spinner, and F. Dixon, finisher.

—At the Airlie Mill, Hanover, Conn., they are putting in a new dynamo and engine for electric lighting, and have also put in a new pair of mules. George Parks is the superintendent; T. Fitzhenry, boss dyer; D. Ladd, boss finisher; W. C. Harrison, overseer of dressing; J. Cobb, overseer of carding, and Martin Grawer, overseer of weaving.

Knit.

—Frank B. Booth, for some years boss knitter in a Brooklyn mill, has resigned to take a similar position in the Fort Schuyler Knitting Mill, Utica, N. Y.

—F. S. Brown, formerly of the Merrimack Co., Lowell, Mass., is now in charge of carding at the new yarn mill of the Oneita Knitting Co., Utica, N. Y.

—Seward Burrows has resigned as engineer for the Paragon Knitting Mill, Mohawk, N. Y.

—George H. Coburn, for the past four years superintendent of the Walter Aiken Sons' knitting mill, Franklin, N.

H., left recently to take charge of a mill near Cleveland.

—Thomas McClintock of Rockville, Conn., is now overseer of dyeing at the Paugasset Mills operated at Derby, Conn., by A. H. & C. B. Alling.

—John E. Owens, formerly overseer of carding at Baldwinsville and Perry, N. Y., is now engaged in a similar capacity with the Faith Knitting Co., Sand Lake, N. Y., succeeding George Spencer, who left about June 1st to accept a position in a felt mill at Camden, Me.

—Alvah Philbrick, formerly overseer of knitting at the Walter Aiken Sons' hosiery mills, Franklin, N. H., has accepted a position as knitter at Knoxville, Tenn.

—William Slater has been appointed overser of spinning in the Tivoli Mill No. 1, and Joseph Slater to a similar position in Tivoli Mill No. 2, Cohoes, N. Y. Both are sons of the late Matthew Slater, who for nearly forty years looked after both positions.

—James A. Willard, late superintendent of the Elizabeth City Knitting Mills, Elizabeth City, N. C., has accepted the superintendency of the Ocoee Hosiery Mills, Chattanooga, Tenn.

—F. Young has been engaged as boss spinner of the Anchor Knitting Company's mills, Almonte, Ontario, vice R. Campbell, resigned.

Deaths.

—William Moore, president of the William Moore Knitting Company, Cohoes, N. Y., died at his home in that city recently. Deceased was born in Ireland and was aged 70 years. He came to this country 45 years ago and located in Cohoes. He learned the carpenter's trade, at which he worked for some years, becoming interested later, however, in the manufacture of knit goods. He was chosen president when the William Moore Knitting Company was organized and incorporated. A widow, a brother and a sister survive him.

—Isaac Scott Smyth, a member of the firm of Young, Smyth, Field & Co., Philadelphia, Pa., died August 19th at his home in Germantown. He was 73 years of age, and had not taken an active part in the affairs of the concern for some years. He is survived by a wife, four sons and one daughter.

—George Mygatt, at one time prominently known in the wholesale dry goods district of New York City, died in South Brooklyn, N. Y., recently, aged 81 years. He had retired from active business about 15 years ago.

—Alexander Baxter, for many years an overseer in the cotton factory of the Greene & Daniels Mfg. Co., Pawtucket, R. I., died last month at Riverside, R. I. Mr. Baxter was born in North Providence, R. I., in 1820. He resigned his position with the Greene & Daniels Mfg. Co. in 1891, and had since made his home with his eldest daughter.

—Oliver Church, a retired woolen manufacturer, died at his home in Middlefield, Mass., last month, aged 80. He was for many years connected with the firm of S. N. Church & Bros., prominent manufacturers. He retired from business some 15 years ago.

—Rockwell Keeney, aged 79 years, died in Somerville, Conn., last month. The deceased was born in South Manchester, Conn., in 1822, and when 17 years old entered the Cheney Silk Mills of that place, remaining there for 15 years. He was engaged in the manufacture of paper boxes in Meriden and Monson, but met with losses, and in 1879 established with his sons a woolen mill in Somersville, which has been successfully operated since.

—Col. William E. Barrows, president of the Welsbach Light Company, and formerly treasurer of the Willimantic (Conn.) Linen Company, died recently. Colonel Barrows was born in 1842, in Hudson, O. After the war, during which he attained the rank of major, he learned the trade of machinist and became a mill engineer. In 1875 he became assistant treasurer of the Willimantic Linen Company and later was elected its treasurer.

—Francis Walker, of Central Falls, R. I., died last month. In his death the city loses one of its oldest and most respected residents. Mr. Walker had resided in this vicinity all his life, and for many years was prominently identified with its business interests. He was long connected with thread manufacturing, part of the time with his brother, the late Dudley Walker, and afterward in his own name.

—James McDonald, aged 34, boss finisher at the Josiah Perry mills in Webster, Mass., died August 12th, after a short illness. He leaves a wife and three children.

—James W. Lyall, sixty-eight years old, a wealthy manufacturer of cotton goods, was found dead at his residence in New York City. The deceased was the president of the firm of J. & W. Lyall, owners of the Brighton Mills at Passaic, N. J., and a plant in Passaic for manufacturing looms and other machinery used in the making of cotton goods. Mr. Lyall invented a positive motion narrow fabric loom, a cop press, for compressing the cotton of the shuttles, and various improvements and devices which have been widely used in the cotton goods industry. He was born in Scotland.

—The death of Thomas H. Cullen, of New York, occurred recently. Mr. Cullen was a well-known woolen merchant. Born at Pawtucket, R. I., in 1840, he came to New York in 1852, and entered business at once. Subsequently he became a member of the firm of Converse, Stanton & Cullen. Since he retired, three years ago, he had been a special partner. He was president of the Dundee Woolen Company of Passaic, N. J., and a director of the Domestic National Bank of New York.

—L. G. Manard, one of the leading business men of Tifton, Ga., died early last month. At the time of his death he was treasurer of the Tifton Cotton Mills and Tifton Knitting Mills, and a member of one of the largest mercantile houses of the city. Besides a wife and several children, he leaves a large circle of relatives and friends to mourn his death.

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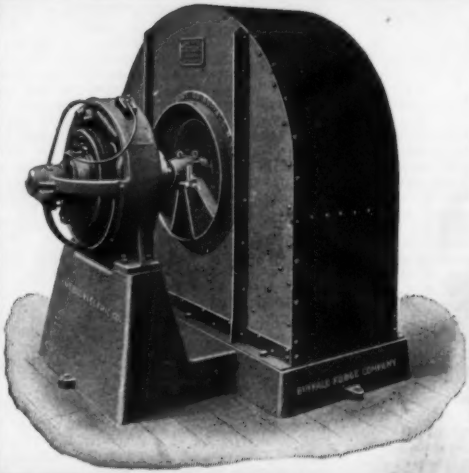

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Ventilating, Drying,
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Buffalo Forge Company Buffalo

BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Alphabetical Index to Advertisements follows this Classified List.

Air Moistening System.
American Moistening Co., 150 Devonshire St., Boston.

Architects and Mill Engineers.
Ferguson, John W., Paterson, N. J.
Gray, Arthur F., Exchange Bldg., Boston.
Lockwood, Greene & Co., 98 Federal St., Boston, Mass.
Praray, C. A. M. & Co., Banigan Bldg., Providence, R. I.

Artificial Stone.
Warren Bros. Co., 143 Federal St., Boston.

Asphalting & Asphalt Materials.
Warren Bros. Co., 143 Federal St., Boston.

Asphalt Roofing.
Warren Bros. Co. 143 Federal St., Boston.

Automatic Feeds for Cotton and Wool.
Atlas Foundry & Mch. Co., Newark, N. J.
Philadelphia Dyeing Machinery Co., 6721 Germantown Ave., Phila., Pa.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Bailing Machine.
Torrance Mfg. Co, 18 Davis St, E. Newark, N. J.

Bandings.
See under Yarns.

Bands and Labels.
Docker-Foster Co., Phila., Pa.

Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Belting.
Alexander Bros., 410 No. 3d St., Phila., Pa.
Boston Belting Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Jeffrey Manufacturing Co., Columbus, Ohio.
Link Belt Machinery Co., Chicago, Ill.
Popham, Henry, & Son, Newark, New Jersey.
Smith, Jas. Woolen Mach. Co., Phila, Pa.
See also Mill Supplies.

Belt Dressing.
Alexander Bros, 410 No. 3d St, Phila, Pa.
Cling Surface Co., 168 Virginia St., Buffalo, N. Y.
Stephenson Mfg. Co., Albany, N. Y.

Belt Hooks.
Bristol Co., Waterbury, Ct.

Bindings.
See Tapes and Braids.

Bleaching Materials.
Bosson & Lane, Boston.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Block Cutting for Printing.
Atlas Copper Stamp Works, 15 Whitehall St., New York.
International Mfg. Co., Brooklyn, N. Y.

Blowers.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Bobbins, Spools, Shuttles, Etc.
Murray, C. O., Nashua, N. H
Southern Bobbin Co., Greensboro, N. C.
Sweet & Doyle, Cohoes, N. Y.
Tebbets, E. L., & Co., Locke's Mill, Me.

Boilers.
See Steam Boilers.

Boxes, Cloth Boards, Etc.
Pearson, J. T, Kensington, Pa.

Boxes Paper.
See Paper Boxes.

Braiding Machinery.
New England Butt'n Co. Providence, R. I.
Textile Machine Works, Reading, Pa.

Braids.
See Tapes, Braids and Edgings.

Brass (Perforated.)
See under Perforated Metal.

Brushes.
Felton, S. A. & Son Co., Manchester, N. H.
Jacobus, A. G. Verona, N. J.
Parks & Woolson Mach. Co., Springfield, Vt.

Brushers
See Napping Machines.

Burr Pickers.
Atlas Foundry & Mch. Co., Newark, N. J.
Curtis & Marble Machine Co., Worcester Mass.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Calico Printers' Machinery and Supplies.
Arlington Machine Works, (Arthur Birch) Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W., Sons & Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Lincoln Co, The, Hartford, Ct.
Phillips Co, The Thomas, Providence, R. I.
Taunton New Bedford Copper Co., New Bedford, Mass.
Rusden Machine Co., Warren, R. I.
See also Dyeing, Bleaching Machinery, etc

Canvas Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Carbonizing Machinery.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts, Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Card Clothing.
Ashworth, Elijah, Fall River, Mass.
Booth, Benj. & Co., Philadelphia.
Leigh, Evan A, 35 Mason Building, Boston.

Card Grinding Machinery.
Hardy Machine Co., Biddeford, Me.
Smith, Jas. Woolen Machinery Co., Phila.

Carders' Tools.
Brown, W. H, Mechanic St, Worcester Mass.

Carpet Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila. Pa.
Curtis & Marble Machine Co, Worcester, Ma.
Furbush, M. A, & Son, Machine Co, Phila, Pa.

Granger Foundry & Machine Co., Providence, R. I.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Parks & Woolson Mach. Co., Springfield, Vt.
Smith, Jas. Woolen Machinery Co., Phila.

Cement "Dealers."
Warren Bros. Co., 143 Federal St., Boston.

Chemicals and Apparatus.
Bullock & Crenshaw, 528 Arch St, Phila, Pa.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Cigars.
Taylor & Stinson, 482 Bourse, Phila, Pa.

Cling Surface.
Cling Surface Mfg. Co., Buffalo, N. Y.

Clocks.
Howard, E. Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.

Clutches.
American Tool & Machine Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., The, New Haven, Conn.
Hunter, James, Machine Co., North Adams, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Combs (Wool and Cotton).
Crabb, William, & Co, Newark, N. J.
Townsend, Thomas, 157 Orange St., Providence, R. I.

Commission Merchants (Dry Goods, Knit Goods).
Charleston Export & Commission Co., Charleston, S. C.
Doane, Thomas H., 233 Monroe St., Chicago, Ill.
Wagner, M. & Co., 213 Ninth St., Pittsburg Pa.

Concrete.
Warren Bros. Co., 143 Federal St, Boston.

Conveying Machinery and Chains.
Jeffrey Manufacturing Co., Columbus, O.
Link Belt Machines Co., Chicago, Ill.

Cop Tubes.
See Paper Tubes.

Copper Gaskets.
U. S. Mineral Wool Co., 149 Liberty St., New York.

Copper (Perforated.)
See under Perforated Metal.

Copper Print Rollers.
Phillips Co, The Thomas, Providence, R. I.
Taunton-New Bedford Copper Co, New Bedford, Mass.

Copper Work for Dyers.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.

Cotton Elevators.
Buffalo Forge Co., Buffalo, N. Y.
Link Belt Machinery Co., Chicago Ill.

Cotton Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila. Pa.
American Loom Co., Readville, Mass.
Ashworth, Elijah, Fall River, Mass.
Atherton, A. T., Machine Co., Pawtucket, R. I.
Barber & Coleman, Pemberton Sq., Boston.
Butterworth, H. W. & Sons Co., Philadelphia.
Cheesman Co., 27 William St., New York.
Curtis & Marble Machine Co, Worcester, Mass.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Fairmount Machine Co, 22d and Wood Sts, Philadelphia.
Houghton, L. T. & Sons, Worcester, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Kitson Machine Co., Lowell, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
Lever, Oswald, Lehigh Ave. and Masher St., Philadelphia.
Lowe, Stephen C., 186 Devonshire St., Boston, Agt. John Hetherington & Sons. Ltd.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
McKerrow, H. G, Boston, Mass.
Parks & Woolson Mach. Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.
Whitin Machine Wks, Whitinsville, Mass.

Cotton Openers and Lappers.
Atherton, A. T., Machine Co., Pawtucket R. I.
Kitson Machine Co, Lowell, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.

Cotton Softeners.
Bosson & Lane, Boston, Mass.
Wilmington Oil Co., Wilmington, Del.

Cotton Waste.
Charles, W. B., Amsterdam, N. Y.

Credits.
National Mercantile Agency, New York and Boston.

Cutters for Knit Fabrics.
Goodwin, J. C., Diamond and Second Sts., Phila., Pa.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.

Dextrine.
Stein, Hirsh & Co, 165 Duane St., New York.

Dryers.
American Blower Co., Detroit.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Hunter, Jas., Machine Co., No. Adams Mass.
Kenyon, D. R. & Son., Raritan, N. J.
Lincoln Co., The, Hartford, Ct.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

Dusters.
See Wool and Waste Dusters.

Dust Collectors.
Allington & Curtis Mfg. Co., Saginaw, Mich.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.

Dyers, Bleachers and Finishers
American Yarn Printing Works, 134-136 North 22d St., Philadelphia.
Barnesville Mfg. Co., Barnesville, Ga.
Brophy's, T, Sons, Jasper St, Philadelphia
Cohoes Dye Works, Cohoes, N. Y.
Cranston Worsted Mills (yarns), Bristol, R. I.
Davidson & Brooke, 2560 No. 3rd St., Philadelphia.
Duncan & Baillie, Cohoes, N. Y.
Firth & Foster Co, Kensington, Pa.
Franklin Bleaching & Finishing Works, Ltd., 70th St., and Haverford Ave., Phila.
Greenwood, R. & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Knause Bleachery, Hamburg, Pa.
Lorimers, The Wm. H. & Sons Co., Phila.
Molt Bros., Millbury, Mass. (Indigo Blue.)

Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Pond Lily Co., New Haven, Ct.
Providence Mills Mfg. Co., 55 Girard Ave., Philadelphia, Pa.
Rowland, Samuel, Schuylkill Haven, Pa.
U S. Finishing Co., New York.
Warren, W, Thread Works, Westfield, Mass.

Dyeing, Drying, Bleaching and Finishing Machinery.
American Blower Co., Detroit.
Automatic Dyeing & Scouring Machinery Co , Box 80, Madison Branch, New York.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Antisdel, E. M., 12 Miller St., Utica, N. Y., (Knit Dryer.)
Birch Bros. (Albert Birce), Somerville. Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W, & Sons Co Phila Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Delahunty Dyeing Machine Co., Pittston, Pa.
Dubois, A. N., 2170 Ledgely Ave., Philadelphia, Pa. (Black for Hosiery.)
Fairmount Machine Co, 22 and Wood Sts, Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Kenyon, D. R. & Son, Raritan, N. J.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Knapp, C. H., Paterson, N. J.
Lincoln Co., The, Hartford, Ct.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Philadelphia Textile Specialty Co , 500 North 12th St., Phila.
Phillips, The Thomas Co, 91-95 South Main St, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)
Webendorfer & Walling, Paterson, N. J.

Dye House Cans.
Hill, James Mfg. Co., Providence, R. I.

Dyehouse Floors.
Warren Bros., 143 Federal St., Boston.

Dye Sticks.
Bailey, Frank, Cedar Brook, New Jersey.
Haedrich, E. M , Philadelphia, Pa

Dyestuffs and Chemicals.
Atteaux, F. E. & Co., 174 176 Purchase St., Boston.
Berlin Aniline Works, 73 Front St., N. Y.
Bischoff, & Co, 87 Park Place, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Calmore & Co., 501 Chestnut St , Phila.
Corey, S. J, 273 Congress St, Boston
Dillon & Co. 20 Cedar St. New York.
Dubois, A. N., 2170 Ledgely Ave., Phila. Pa.
Farbenfabriken of Elberfeld Co, 40 Stone St, N. Y.
Fortner, L. B., 36 Strawberry St., Phila.
Geisenheimer & Co, 189 Front St, New York.
Holliday & Sons, Ltd., Read, 7 Platt St., New York.
Janney, O. S, & Co, Phila. and Boston.
Johnson, Chas. A, & Co, 22 Dey St, N. Y
Johnson, Wm. G, & Co, Uncasville, Conn.
Keller, John J, & Co, 104-106 Murray St, N. Y.
Klipstein, A, & Co, 122 Pearl St, N. Y.
Koechl, Victor, & Co, 122 Hudson St, N. Y.
Kuttroff, Pickhardt & Co., New York.
Matheson, W. J. & Co, 182-184 Front St, N.Y.
Molt Bros., Millbury, Mass. (Indigo Blue.)
N. Y. & Boston Dyewood Co, 55 Beekman St, New York.
Oakes Mfg. Co, 93 Pearl St, N. Y.
Roessler & Hasslacher Chemical Co, 100 William St , New York.
Ross, W. A. & Bro., 100 William St. N. Y.
Schoellkopf, Hartford & Hanna Co., Philadelphia, N. Y. and Boston.
Sharpless Dye Wood Ext. Co, The Bourse, Phila, Pa.
Stamford Mfg. Co, 133-137 Front St., N. Y.
Sykes & Street, 85 Water St, N. Y.
Thayer, Ed. M., 106 Broad St., Boston, Mass.
United Indigo & Chemical Co., Ltd., 176 Federal St., Boston.
Vila, H S., 115 So. 2nd St., Philadelphia, Pa.

Dynamos.
General Electric Co., 44 Broad St., New York
Sturtevant, Co., B. F. Boston.

Edgings.
See Tapes, Braids and Edgings.

Elastic Web Calendering Machines.
Knapp, C. H., Paterson, N. J.

Electrotyping and Printing.
Whitcomb, H. C, & Co, Boston.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N.Y.
Eastern Machinery Co, The, New Haven Conn.
Jeffrey Manufacturing Co., Columbus, O.
Howard, Geo. C., 1783 Barker St., Phila., Pa.

Electrical Construction.
General Electric Co., 44 Broad St., New York.

Electric Fans.
American Blower Co., Detroit.
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., 44 Broad St., New York.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa
Sturtevant Co., B. F., Boston.

Electric Lighting.
General Electric Co., 44 Broad St., New York.

Electric Lighting Apparatus.
Incandescent Electric Light Manipulator Co., 168 Bedford St., Boston.

Electric Motors.
General Electric Co., 44 Broad St., New York.
Sturtevant Co., B. F., Boston.

Engine Foundations.
Warren Bros. Co., 143 Federal St., Boston.

Engineers, Mechanical.
Ferguson, John W, Paterson, N. J.

Exhaust Heads.
Burt Manufacturing Co , Akron, Ohio.

Fans—Exhaust and Ventilating.
See Ventilating Apparatus.

Feed Water Heaters.
Green Fuel Economizer Co., Matteawan N. Y.
Scaife, W B. & Sons, Pittsburg, Pa.

Feed Water Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feeds
See Automatic Feeds.

Filters.
Scaife, W. B. & Sons Pittsburg, Pa.

Finishing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Fluted Rolls.
Cohoes Foundry & Machine Co, Cohoes, N.Y
Thurston, A. G, & Son, Box 528, Fall River. Mass.

Forges.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Friction Clutches.
See Clutches.

Friction Hoisting Drums.
Eastern Machinery Co., New Haven, Conn.

Fuel Economizers.
Green Fuel Economizer Co., Matteawan, N. Y.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R. & Son, Raritan, N. J.

Garnetts.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Gas Engines.
Jones, Lewis, 60½ and Media Sts, Phila, Pa.

Gas Exhausters.
Sturtevant Co., B F., Boston.

Gears.
New Process Raw Hide Co., Syracuse, N. Y.

Gear Cutting Machine.
Whiton, The D. E, Co, New London, Conn.

Generating Sets.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.
Grate Bars.
U. S. Rocking Grate Bar Co., Elizabeth, N.J.
Heating.
See Ventilating.
Heddles.
Watson, L. S, Mfg. Co, Leicester, Mass.
Hoisting Machinery.
The Eastern Machinery Co., New Haven, Conn.
Hose.
Boston Belting Co., Boston.
Hosiery Labels.
Docker, Foster Co., Philadelphia, Pa.
Saranac Electrical Mfg. Co., St. Joseph, Mich.
Hosiery Boards.
Pearson, J. T, Kensington, Pa.
Humidifying Apparatus.
American Air Moistening Co., Boston.
Hydro Extractors.
American Tool & Machine Co., Boston.
Rusden Machine Co., Warren, R. I.
Ironing Machines for Knit Goods.
Craw, J. W Laundry Machinery Co., So. Norwalk, Conn.
Key Seaters.
Leisenring Mfg. Co., Philadelphia, Pa.
Knit Goods Edgings, Trimmings, etc.
Cathcart, John & Co., 115 Franklin St., New York.
Chapin, Geo. W. Philadelphia, Pa.
Charles, W, B., Amsterdam, N. Y.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Friedberger & Co, Edgings, Germantown Phila, Pa.
Hepner & Horwitz, Lacings, 30 Howard St, N. Y.
Krout & Fite Mfg. Co, Allegheny Ave. and Emerald St., Phila.
Schneebeli, G. A. & Co., Nazareth, Penn.
Weimar Bros, 1817 East York St, Phila Pa.
Knit Goods Finishing Machines, Crochet, Etc.
Craw, J. W. Laundry Machinery Co., So. Norwalk, Conn.
Industrial Mfg. Co., Camden, N J.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 2079 E. Cumberland St, Phila Pa.
Willcox & Gibbs Sewing Mch. Co., New York.
Knitting Machine Cylinders.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Stafford & Holt, Little Falls, N. Y.
Knitting Machinery.
American Knitting Machine Co., 6th and Arch St. Philadelphia. Pa.
Antisdel, E. M., 12 Miller St., Utica, N Y.
Beattie, Wm. & Son, Cohoes, N. Y.
Branson Machine Co., 506 N. American St., Philadelphia.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Crane Mfg. Co, Lakeport, N. H.
Excelsior Knitting Machine Manufacturing Co., Allentown, Pa.
Goodwin, J. C. Second and Diamond Sts., Phila., Pa. (Cutters.)
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y.
Keystone Knitting Machine Mfg. Co., 40 N. 7th St., Phila.
Lamb Knitting Mach. Mfg. Co., Chicopee Falls, Mass.
Leighton Machine Co, Manchester, N. H.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
McMichael & Wildman Mfg. Co, Norristown, Pa.
Mueller, Arthur, 760 Lexington Avenue., Brooklyn, N. Y.
Nye & Tredick, 606 Arch St, Phila, Pa.
Paxton & O'Neill, 127 Bread St, Phila, Pa.
Pepper Mfg. Co, Lakeport, N. H.
Scott & Williams, 2079 E. Cumberland St., Phila., Pa.
Snyder, Homer P. Mfg. Co. Little Falls, N. Y.
Stafford & Holt, Little Falls, N. Y.
Taylor, James, 835 Arch St., Philadelphia.
Tompkins Bros., Troy, N. Y.
Knitting Needles and Supplies.
Breedon, Wm. & Son, Amsterdam, N. Y.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Corey, Wm, Co, Manchester, N. H.
Crane Mfg. Co, Lakeport, N. H.
Dodge Needle Co., Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Keystone Knitting Machine Mfg. Co., 40 N. 7th St., Philadelphia.
Lamb Knitting Machine Mfg. Co., Chicopee Falls, Mass.
Manufacturers' Supplies Co., 68 No. 4th St. Philadelphia.
Mayo Knitting Machine & Needle Co Franklin, N. H.
Page Needle Co, Chicopee Falls, Mass.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co, Lakeport, N. H.
Knotter for Spoolers.
Barber & Coleman, 504 Sears Bldg., Boston.
Labeling Machine.
Saranac Electrical Mfg. Co., St. Joseph, Mich.
Laboratory Outfits.
Bullock & Crenshaw, 528 Arch St. Phila, Pa
Looms.
American Loom Co., Readville, Mass.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A, & Son Co, Phila, Pa.
Howard, Geo. C., 1733 Barker St, Phila., Pa. (For wire.)
Kilburn, Lincoln & Co. Fall River, Mass.
Leigh, Evan A., 35 Mason Bldg., Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Ross, Hugh R., Belfast, Ireland.
Smith, Jas. Woolen Machinery Co., Phila.
Whitin Machine Works, Whitinsville, Mr,
Loom Pickers.
Loom Picker Co., Biddeford, Me.
Lubricators
Dixon, Jos., Crucible Co, Jersey City, N. J.
Lumber.
Stearns, A. T, Lumber Co, Neponset, Mass.
Lumpers.
Gerry, George, & Son, Athol, Mass.
Machinery Dealers.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Schofield, Geo. L. Phila., Pa.
Taylor, James, 835 Arch St., Philadelphia.
Machinists' Tools.
Dodge Mfg Co., Mishawaka, Ind.
Leisenring Mfg. Co., Philadelphia, Pa.
Whiton, The D. E. Co, New London, Conn.
Mails.
Walder, J, Paterson, N. J.
Measuring and Folding Machines.
Curtis & Marble Machine Co, Worcester, Ms.
Elliott & Hall, 54½ Hermon St, Worcester Mass.
Fabric Measuring & Packaging Co., Postal Telegraph Bldg, New York.
Parks & Woolson Mach Co, Springfield, Vt.
Mechanical Draft.
American Blower Co., Detroit.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.
Mercerizing Machinery.
Butterworth, H. W. & Sons, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Klauder Weldon Dyeing Machine Co., Amsterdam, N. Y.
Philadelphia Textile Specialty Co., 500 North 12th St, Phila.
Rusden Machine Co., Warren, R. I.
Mill Architects.
See Architects & Mill Engineers.
Mill Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.
Mill Brushes.
See Brushes.

Mill Builders and Engineers.
Ferguson, John W, Paterson, N. J.

Mill Supplies.
American Supply Co, Providence, R. I.
Bamford & Smith, Passoag, R. I.
Bristol, The, Co., Waterbury, Conn
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Carpenter, Geo. B & Co., Chicago, Ill.
Dixon Lubricating Saddle Co., Bristol, R.I
Dodge Mfg. Co., Mishawak , Ind.
Douglas, R. D., Fall River, Mass.
Easton Burnham Co., Pawtucket, R. I.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Jeffrey Manufacturing Co., Columbus, O.
Lane, W. T. & Bro., Port Chester, N. Y.
Leisenring, John Mfg Co., Phila., Pa.
National Supply Co , Paterson, N. J.
Smith, Jas. Woolen Machinery Co., Phila.
Southern Bobbin Co., Greensboro, N. C.
Sweet & Doyle, Cohoes, N. Y
Thurston, A. G, & Son, Fall River, Mass.
Watson, L. S, Mfg.Co, Leicester, Mass.

Napping Machines.
Columbia Napping Machine Co., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.
Parks & Woolson Mach. Co. Springfield, Vt.

Noils (Silk.)
Ryle, Wm. & Co., 54 Howard St., N. Y.
Malcolm Mills Co., Frankford, Pa.

Oil Cabinets.
New York Oil Cabinet Co., New York.

Oil Filters.
Burt Manufacturing Co., Akron, Ohio.

Packing.
Boston Belting Co , Boston.
Jenkins Bros., New York.

Pantagraphs for Mill Engraving.
Johnson, C. A, & Co, 32 Dey St, New York.

Paper Tubes.
Douglas, R. D., Fall River, Mass.

Patent Solicitors.
Crosby & Gregory, 34 School St, Boston, Mass.
Siggers, E. G., Washington D. C.
Wolhaupter, D. P., Equitable Bldg., Washton, D. C.

Pavers & Paving Materials.
Warren Bros. Co., 143 Federal St., Boston.

Perforated Metal.
American Perforated Metal Co., 171 Wooster St., New York.
Beckley, A. J. & Co., Garwood, N. J.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co., 100 William St, New York.

Picker Sticks.
Loom Picker Co., Biddeford, Me.
Southern Bobbin Co., Greensboro, N. C.

Pipe Covering.
Keasbey, R. A, 83 Warren St, New York.

Pneumatic Conveying.
See Ventilating.

Power Transmitting Machinery.
Carpenter, Geo. B. & Co , Chicago Ill.
Dodge Mfg. Co., Mishawaka, Ind
Durable Wire Rope Co. 178 Congress St., Boston.
Eastern Machinery Co, New Haven, Conn.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Kilburn, Lincoln & Co, Fall River, Mass.
Link Belt Machinery Co, Chicago, Ill.
Rusden Machine Co., Warren, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Saginaw Manufacturing Co., Saginaw, Mich.
Smith, Jas. Woolen Machinery Co., Phila.

Preparatory Machinery, (Cotton).
Atherton, A. T., Mach. Co., Pawtucket, R. I.
Howard & Bullough Am. Machine Co., Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.

Presses.
Boomer & Boschert Press Co., 338 West Water St., Syracuse, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Crawford. J. J, & Son, Nashua, N. H. (Power Screw, Hydraulic, Hollow Steam Plate.)
Curtis & Marble Machine Co, Worcester, Ms.
Hart, Charles, Frankford, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Phillips Co, The Thomas, Providence, R. I.

Printers (Fabrics and Yarn.)
American Yarn Printing Works, Philadelphia.

Pulley Covers.
Warren Co , The (Inc.), 34 Jackson St , Chicago, Ill.

Pulleys.
See Power Transmitting Machinery.

Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Rusden Machine Co., Warren, R. I.

Purifying & Filtration Plants.
Scaife, W B. & Sons, Pittsburg, Pa.

Rag Pickers.
Smith, Jas. Woolen Mach. Co., Phila, Pa.

Raw Hide Gears.
New Process Raw Hide Co. Syracuse, N. Y

Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Leisenring, John Mfg. Co., Phila.
Loom Picker Co., Biddeford, Me.
Walder, J, Paterson, N. J.

Ribbons.
Barton, F. C., 54 Franklin St., New York.
Cheney Bros, S. Manchester, Ct.

Ring Travellers.
National Ring Traveller Co., Providence, R. I.
Morley Button Mfg. Co., Boston.

Roofing Asphalt.
Warren Bros. Co., 143 Federal St., Boston.

Roofing Materials (Manufacturers).
Warren Bros. Co., 143 Federal St., Boston.

Rope Transmission.
American Mfg. Co., New York.
Carpenter, Geo. B & Co., Chicago, Ill.
Dodge Mfg. Co , Mishawaka, Ind.
Durable Wire Rope Co., 178 Congress St Boston, Mass.
Link Belt Mfg Co., Chicago, Ill.

Roving Cans.
Diamond State Fibre Co., Elsmere, Del.
Hill, James Mfg. Co., Providence, R. I.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.
Laminar Fibre Co., No. Cambridge, Mass.
Walrus Fibre Mfg. Co., Medford, Mass.

Rubber Covered Rollers and Goods.
Boston Belting Co., Boston.

Saddles and Stirrups.
Dixon Lubricating Saddle Co., Bristol, R. I

Sample Cards and Mounting.
Merchants Sample Card Co., 33 Sullivan St., New York.

Scales
Sweet& Doyle, Cohoes, N. Y.

Schools.
American Correspondence School of Textile, New Bedford, Mass
Georgia School of Technology, Atlanta, Ga.
Lee's College, Charlotte, N. C.
New Bedford Textile School, New Bedford, Mass.
Lowell Textile School, Lowell, Mass.
Philadelphia Textile School, Phila, Pa.

Screens (Perforated.)
See under Perforated Metal.

Selling Agents.
See Commission Merchants.

Separators.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Draper Co , The, Hopedale, Mass.

Sewing Machines and Supplies.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.

Birch Bros. (Albert Birch), Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Fales, L. F., Walpole, Mass.
Industrial Mfg. Co., Camden, N J.
Manufacturers' Supplies Co., 66 No. 4th St., Philadelphia.
Rusden Machine Co., Warren, R. I.
Union Button Sewing Mch. Co., 164 High St., Boston.
Wilcox & Gibbs S. M. Co., New York.

Shafting Hangers, Etc.
See Power Transmission Machinery.

Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Shell Rolls.
Cohoes Foundry & Mach. Co. Cohoes, N. Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Shoddies.
See Wool Shoddies.

Shuttles.
See Bobbins, Spools, Shuttles, Etc.

Silk Machinery.
Butterworth, H. W. Sons Co, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Knapp, C. H., Paterson, N. J.
Mason Machine Works, Taunton, Mass.
Rusden Machine Co., Warren, R. I.

Singe Plates.
Butterworth, H. W. Sons Co., Philadelphia.
Taunton-New Bedford Copper Co., New Bedford, Mass.

Singeing Machines.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch). Somerville. Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ma.
Granger Foundry & Machine Co., Providence, R. I.
Knapp, C. H , Paterson, N. J.
Rusden Machine Co., Warren, R. I.

Sizing. Starch and Gums.
Arabol Mfg. Co., 155 William St., New York.
O. K. Soap Co., 968 Franklin St., Phila.
Potter, R. V. B., 231 Chestnut St., Phila.
Stein, Hirsch & Co, 165 Duane St, New York.

Sky Lights.
Drouve, The G. Co., Bridgeport, Ct.

Slashers.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Lowell Machine Shop, Lowell, Mass.
Phillips The Thomas, Co., Providence, R.I.

Soaps.
India Alkali Works, Boston, Mass.
O. K. Soap Co., 968 Franklin St., Phila.

Spindles.
Bamford & Smith, Pascoag, R. I.
Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Ward & Undergrift, Elmer, N. J.
Whitin Machine Wks, Whitinsville, Mass.

Spindle Tubes.
Bamford & Smith, Pascoag, R. I.

Spinning Cylinders.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Spinning Frames.
See Cotton Machinery.

Spinning Rings.
Draper Company, Hopedale, Mass
Whitinsville Spinning Ring Co, Whitinsville, Mass.

Spinning Tubes.
Buckley, Benj's. Son, Gun Mill, Paterson, N. J.

Spools. *See Bobbins, Spools Shuttles, Etc.*

Spool Cotton for Mfrs. Use.
Warren, W. Thread Works, Westfield, Mass.

Spooler Knotter.
Barber & Coleman, 504 Sears Bldg., Boston.

Sprinklers
International Sprinkler Co., Philadelphia, Pa.

Stamps for Hosiery.
Atlas Copper Stamp Works, 15 Whitehall St , N. Y.
International Mfg. Co., Brooklyn N. Y.
Wells, Wilfred, 805 W. Lehigh Ave., Philadelphia.

Steam Boilers.
Babcock & Wilcox Co., The, 29 Cortland St., New York City.
Brown, C. H, & Co, Fitchburg, Mass.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.

Steam Engines.
American Blower Co , Detroit, Mich.
Brown, C. H, & Co, Fitchburg, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Hooven (The), Owens & Rentschler Co, Hamilton, O.
Rusden Machine Co., Warren, R. I.
Sturtevant, B. F. & Co., Boston.

Steam Surface Coverings.
Keasbey, Robert A., New York.

Steam Specialties.
Butterworth, H. W. Sons Co., Philadelphia.
Jenkins Bros., New York.
Rusden Machine Co., Warren, R. I.
Sturtevant Co., B. F., Boston.
U. S. Rocking Grate Bar Co., Elizabeth, N.J.

Steam Valves.
Jenkins Bros., New York.

Stop Motion for Looms.
See, also, Warp Stop Motions.
Tucker stop Motion Co., Winsted, Ct.

Tanks, Tubs and Vats.
Caldwell Co., W. E. 202 Brook St., Louisville, Ky.
Cypress Lumber Co, Apalachicola, Fla.
Lewis, H. F. & Co., New Orleans, La.
Rusden Machine Co. Warren, R. I.
Stearns, A. T, Lumber Co, Neponset, Mass.
Woolford, George, 2240 No. 9th St, Phila, Pa.

Tapes, Braids and Edgings.
Barton, F. C., 54 Franklin St., New York.
Cathcart, John, & Co, 115 Franklin St, N. Y
Chapin, Geo W Philadelphia. Pa.
Friedberger Mfg. Co, Germantown, Pa.
Krout & Fite Mfg. Co., Allegheny Ave. and Emerald St., Philadelphia.
Schneebeli, G. A. & Co., Nazareth, Pa.
Weimar Bros, 1817 East York St, Phila, Pa.

Telephones.
Mianus Electric Co., Mianus, Conn.
Plummer, F. O. 620 Atlantic Ave., Boston.

Temples.
American Loom Co., Readville, Mass.
Draper Co., Hopedale, Mass.

Tension Pulleys.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Tentering Machines.
See Dyeing, Bleaching Machinery, Etc.

Tenter Clips.
See Dyeing, Drying, Bleaching and Finishing Machinery.

Testing Machines.
Howard, Geo. C., 1783 Barker St., Phila., Pa

Textile Schools.
See Schools.

Thread Board for Spinning & Twisting Frames.
Houghton, L. T. & Sons, Worcester, Mass.

Thread Protectors.
Ring Frame Thread Protector Co., The, Amsterdam, N. Y.

Tickets and Labels.
Saranac Electrical Mfg Co. St. Joseph, Mich.

Time Recorders.
Simplex Time Recorder Co., Gardner, Mass.

Towers.
Caldwell Co., W. E. 202 Brook St., Louisville, Ky.

Tower Clocks.
Howard, E. Clock Co., Marlboro Building, Boston.

Turbine Governers.
Replogle Governor Works, Akron, O.

Turbines.
(See Water Wheels.)

Valves—Rubber.
Boston Belting Co., Boston, Mass.

Ventilating Apparatus.
Allington & Curtis Mfg. Co., Saginaw, Mich., 81 Wareham St., Boston.

American Air Moistening Co., Boston.
American Blower Co., Detroit, Mich.
Berry, A. Hun, 23 W. 1st St, Boston, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Drouve, The G. C ., Bridgeport, Ct.
New England Ventilating & Heating Co, Providence, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philapelphia.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

Wall Whitening.
Moore, Benj. & Co, Brooklyn, N. Y.

Warp Stop Motions.
Am. Loom Co., Readville, Mass.
Draper Co., Hopedale, Mass.

Washers (Cloth).
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass
Butterworth, H. W. & Sons Co., Philadelphia.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R., & Son, Raritan, N. J.
Phillips Co, The Thomas, Providence, R. I.
Rusden Machine Co , Warren, R. I.
Webendorfer & Walling, Paterson, N. J.

Watchman's Clocks.
Am. Watchman's Time Detector Co., Broadway, N. Y.
Eco Magneto Clock Co, 620 Atlantic Ave, Boston.
Howard, E. Clock Co., 406 Washington St., Boston, Mass., 41 Maiden Lane, New York.
Nanz & Co, 127 Duane St., New York.

Waterproof Floors.
Warren Bros. Co., 143 Federal St., Boston.

Water Purifiers & Filters.
Scaife, W. B. & Sons, Pittsburg, Pa.

Water Wheels.
Alcott, T. C., & Son, Mt. Holly, N. J.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.

Water Wheel Governors.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Leffel, James & Co, Springfield, Ohio.
Replogle Governor Works, Akron, O.

Winders. (Back.)
Taylor, Jas., 835 Arch St., Philadelphia.

Winder Bobbins.
Sweet & Doyle, Cohoes, N. Y.

Winders. (Hosiery.)
Altemus, W. W. & Son, Philadelphia.
Foster Machine Co., Westfield, Mass.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia.
Universal Winding Co, 93 South Street Boston.

Wood Pulleys.
Dodge Mfg Co., Mishawaka, Ind.
Saginaw Manufacturing Co, Saginaw, Mich.

Wool Burrer.
Cheesman Co., 27 William St., New York.

Wool Cleaning Compound.
India Alkali Works, Boston.

Wool Combing Machinery.
Leigh, Evan A. 35 Mason Bldg., Boston.

Wool and Waste Dusters.
Atlas Foundry and Mch. Co., Newark, N. J.
Gerry, Geo. & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Woolen and Worsted Machinery.
Altemus, W. W. & Co, 2816 N. 4th St, Phila., Pa.
American Tool and Machine Co., Boston.
Arlington Mch. Works (Arthur Birch), Arlington Heights, Mass.
Atlas Foundry and Mch Wks., Newark, N.J.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Cheesman Co., 27 William St., New York.
Curtis & Marble Machine Co, Worcester, Mass.
Fales, L. F , Walpole, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila., Pa.
Howard, Geo. C., 1788 Barker St., Phila., Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jefferson, Ed. & Bro, 28 Strawberry St, Phila, Pa.
Kenyon D. R. & Son, Raritan, N. J.
Leigh, Evan A. 35 Mason Bldg, Boston.
Lever, Oswald, Lehigh Ave. and Masecher St., Philadelphia, Pa.
Lowe, Stephen C., 186 Devonshire St., Boston. Agt. John Hetherington & Sons, Ltd.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Philadelphia.
Phillips Co. The Thomas, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.

Wool Shoddies.
Becker, Chas. W., Agt., Amsterdam, N. Y.
Slack, Wm. H. H., & Bro, Springfield, Vt.

Wool Washing, Preparing and Drying Machinery.
Hunter, Jas. Machine Co., No. Adams, Mass.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Phillips Co, The Thomas, Providence, R. I.
Sargent's, C. G, Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

YARNS, THREADS, ETC.

Banding.
Moore, C. & Co, 12 S. 5th St, Phila, Pa.
Warren, W, Thread Works, Westfield, Mass.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Cotton Mills, Lowell, Mass.

Cotton Yarns.
American Cotton Yarn Exchange, 67 Chauncy St., Boston.
Barnesville, Mfg. Co., Barnesville Ga.
British Cotton and Wool Dyers' Association, Ltd., 231 Chestnut St., Phila., Pa.
Buckingham & Paulson, 83 Leonard St., New York.
Catlin & Co, New York and Boston.
Charles, W. B., Amsterdam, N. Y.
Dana Warp Mills, Westbrook. Me.
Dexter Yarn Co., Pawtucket, R. I.
Dodds, J. S., 517 Wool Exchange, New York
Eddy & Street, Providence, R. I.
Spring St., N. Y.
Eichmann & Sternberg, New York.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Indian Orchard Co., Indian Orchard, Mass.
Jenckes, E., Mfg. Co., Pawtucket, R. I.

Mitchell, Jas. E, & Co, Boston and Phila, Pa.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
Morgan, E. A. 54 Franklin St., N. Y.
New England Cotton Yarn Co, New Bedford, Mass.
Orswell Mills, Fitchburg, Mass
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Tucker & Coon Mfg. Co, Conway, Mass.
Whittier Cotton Mills, Lowell, Mass.

Cotton Yarns Wool Spun.

Broadbent, J. & Sons, Unionville, Conn.

Flax. Hemp. Jute and Ramie.

Fawcett, Hughes, 115 Franklin St., N. Y
Eichmann & Sternberg, 530 Broadway, N. Y.
Morgan, E. A., 54 Franklin St., N. Y.

Gassed Yarns.

British Cotton and Wool Dyers' Association, Ltd, 231 Chestnut St., Phila., Pa.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, New York.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
New England Cotton Yarn Co, New Bedford, Mass.

Glazed Yarns.

Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimers, Wm. H. & Sons Co., Philadelphia.
Malcolm Mills Co, Frankford, Pa.
Montgomery & Co, J. R, Windsor Locks, Ct.
Morgan, E. A., 54 Franklin St., N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Harness Twine.

Cranston Worsted Mills, Bristol, R. I.
Eichmann & Sternberg, 530 Broadway, N. Y.
Fawcett, Hughes, 115 Franklin St., N. Y.
Moore, C., & Co., (S. W. cor. 5th and Market Sts.)
Morgan, E. A., 54 Franklin St., N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Hosiery and Knitting Yarns.

Barnesville Mfg Co., Barnesville, Ga.
Boyer, B. F, & Co, Camden, N. J.
British Cotton and Wool Dyers' Association, Ltd., 231 Chestnut St., Phila., Pa.
Broadbent, J. & Sons, Unionville, Conn.
Cranston Worsted Mills, Bristol, R. I.
Dexter Yarn Co., Pawtucket, R. I.
Greene & Daniels Mfg. Co. Pawtucket, R. I.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E., Manufacturing Co, Pawtucket, R. I.
Mitchell, James E, & Co, Phila. and Boston
Monument Mills, Housatonic, Mass.
New England Cotton Yarn Co., New Bedford, Mass.
Orswell Mills, Fitchburg, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Skerry, A. T, & Co, 47 Leonard St, N. Y.
Walcott & Campbell Spinning Co, New York Mills, Oneida Co. N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Mercerized Yarns.

British Cotton and Wool Dyers' Association, Ltd., 231 Chestnut St., Phila., Pa.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimer, Wm. H. & Sons Co, Philadelphia.
Montgomery, J. R. & Co., Windsor Locks, Conn.
Morgan, E. A., 54 Franklin St., N. Y.

Mohair Yarns.

Cranston Worsted Mills, Bristol, R. I.
Goff, D. & Sons, Pawtucket, R. I
Skerry, A. T, & Co., 47 Leonard St., N. Y.

Novelty Yarns, Tinsels, Silk Noils, Etc.

Cranston Worsted Mills, Bristol, R. I
Eichmann & Sternberg, 530 Broadway, New York.
Indian Orchard Co., Indian Orchard, Mass.
Malcolm Mills Co, 229 Chestnut St, Phila, Pa.
Montgomery & Co, J. R, Windsor Locks, Ct.
Skerry, A. T, & Co, 47 Leonard, St, N. Y.

Silk Yarns.

Cheney Bros, S. Manchester and Hartford Ct.
Eddy & Street, Providence, R. I.
Eichmann & Sternberg, 530 Broadway, New York.
Mason, Dan'l, Voorhis Mill, Paterson, N. J.
Ryle, Wm, & Co, 54 Howard St, N. Y.

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Broadbent, J. & Sons, Unionville, Conn.
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Alphabetical Index to Advertisements.

page

Alcott, T. C. & Son 622
Alexander Bros., ... 448
Allegheny Worsted Mills. 582
Allington & Curtis . Outside Back Cover
Altemus, W. W. & Son, ... 444
American Blower Co , ... 623
American Correspondence School of Textiles, ... 573
American Cotton Yarn Exchange, . 575
American Knitting Machine Co., . . 6 2
American Loom Co., The, ... 426
American Mfg. Co., ... 4 6
American Moistening Co. 580
American Perforated Metal Co. . . 584
American Supply Co., ... 4 4
American Tool and Machine Company 603
Am. Watchman's Time Detector Co. . 449
American Yarn Printing Works . . 5 8
Anti-del, E. M. 617
Araboi Mfg. Co., The 419
Arlington Mach. Works (Arthur Birch), 601
Ashworth, Elijah, ... 437
Atlas Copper Stamp Works . . . 446
Atlas Foundry Mch. Co 439
Atherton Machine Co., The A. T. . . 426
Atteaux, F. E. & Co. 596
Automatic Dyeing & Scouring Mch'y Co., 592
Babcock & Wilcox Co., The, . . . 441
Bailey, Frank 605
Bamford & Smith. 606
Barber & Coleman 4 6
Barnesville Mfg. Co. 578
Barton, F. C., ... 585
Beattie, Wm. & Son 618
Becker, Chas. W., Agt. 588
Beckley, A. J. & Co. 5 8
Berlin Aniline Works, ... 597
Berry, A. Hun, ... 605
Birch Bros. (Albert Birch) . . . 435-602
Bischoff, C., & Co., ... 599
Boomer & Boschert Press Co. . . . 576
Booth, Benj Co. 437
Bosson & Lane, ... 600
Boston Belting Co., ... 455
Boyer, B. F. & Co, ... 582
Branson Machine Co, ... 612
Breedon Sons Wm., ... 619
Brinton, H. & Co. 615
Bristol Co., The . Outside Back Cover
British Cotton & Wool Dyers' Ass'n . 591
Broadbent, J. & Sons, ... 583
Brophy's, T. Sons 991
Brown, C. H. & Co, Outside Back Cover
Brown, W. H, ... 572
Buckingham, Paulson & Co., . . . 583
Buckley's Benj., Son, ... 572
Buffalo Forge Co. 554
Burt Mfg. Co. 440
Butterworth H. W. & Sons Co., . . 417
Caldwell, W. E. Co. 604
Calmore & Co., ... 599
Campion, Richard, ... 584
Carpenter, Geo. B., & Co. 472
Cathcart, John & Co. 618
Catlin & Co, ... 581
Chapin, Geo. W., ... 575
Charles, William B. 575
Charleston Export & Com. Co., . . 575
Cheesman Co. . . . . —
Cheney Bros, ... 584
Cling Surface Co. 554
Cohoes Foundry & Machine Co., . . 430
Columbia Napping Machine Co. . . 606
Cooper, Chas, ... 618
Corey, S. J., ... 596
Corey, Wm., Co., ... 619
Crabb, Wm. & Co, ... 448
Crane Mfg. Co., ... 618
Cranston Worsted Mills, ... 582
Craw, J. W. Laundry Mchy. Co., . . 617
Crawford, J. J. & Son., ... 620
Croft, Howland, Sons & Co, . . . 582
Crosby & Gregory, ... 475
Curtis & Marble Machine Co., . . 606
Cypress Lumber Co, ... 604
Dana Warp Mills 580
Davidson & Brooke 591
Delahunty Dyeing Mch. Co. . . . 603

page

Dexter Yarn Co., ... 583
Diamond State Fibre Co. 443
Dillon & Co, ... 599
Dixon, Jos., Crucible Co., ... 439
Dixon Lubricating Saddle Co. . . . 444
Doane, Thomas H. 575
Docker-Foster Co. 6 8
Dodge Manufacturing Co. 433
Dodge Needle Co. 614
Dodds, J. S. 583
Dougl s, R. D. 417
Draves Co , he G. 449
Draper Company 419
Dubois, A. N 594
Duncan & Baillie, ... 580
Durable Wire Rope Co. 442
Eastern Machinery Co. 622
Easton-Burnham Co., ... 576
Eco Magneto Clock Co, ... 4 9
Eddy & Street, ... 583
Eichmann & Sternberg, ... 583
Elliot & Hall, ... 436
Excelsior Knitting Machine Mfg. Co, . 614
Fabric Measuring and Packaging Co. . 431
Fairmount Machine Co, ... 4 0
Fales, L. F , ... 606
Farbenfabriken of Elberfeld Company, 594
Fawcett, Hughes, ... 5 1
Felton, S. A. & Son Co., ... 434
Ferguson, John W., . Outside Back Cover
Firth & Foster Co 587
Fortner, L. R. 598
Foster Machine Co. 427
Franklin Bleaching & Finishing Works 587
Friedberger Mfg Co. 611
Furbush, M. A & Son Machine Co. . 456
Geisenheimer & Co, Outside Back Cover.
General Electric Co., ... 441
Gerry, Geo. & Son, ... —
Goff, D. & Sons 576
Goodwin, J. C. 621
Goulds Mfg. Co, ... —
Granger Foundry & Machine Co., Inside Front Cover.
Grant Yarn Co., ... 581
Gray, Arthur F. 574
Greene & Daniels Mfg. Co., . . . 578
Green Fuel Economizer Co., . . . 441
Greenwood, K., & Bault, ... 580
Haedrich E. M. 605
Hardy Machine Co., ... 439
Hart Chas. 620
Hartford Steam Boiler Inspection & Insurance Co., ... 588
Hepner & Horwitz, ... 610
Hill, James Mfg Co., ... 443
Home Bleach & Dye Works, . . . 591
Hooven, Owens & Rentschler Co, . . 443
Houghton, L. T 447
Howard, E. Clock Co. 449
Howard, Geo. C., ... 442-599
Howard & Bullough Am. Machine Co., . 421
Hunter, Jas, Machine Co, ... 608
Hunt, Rodney, Machine Co, . . . 609
Hyde, Edward S., ... 575
Incandescent Electric Light Manipulator Co. 572
India Alkali Works, ... 588
Indian Orchard Co. 5 8
Industrial Manufacturing Co., . . . 620
International Mfg. Co 446
International Sprinkler Co., . . . 432
Ives, Loyal T 619
Jacobus, Austin G. 436
Janney, O. S., & Co., ... 600
Jefferson, Edw, & Bro., ... 565
Jeffrey Mfg. Co. 622
Jenckes, E., Mfg. Co., ... 583-615
Jenkins Bros . Outside Back Cover.
Johnson, Chas. A., & Co., ... 593
Jones, Lewis 615
Keighley, Robert A Outside Back Cover.
Keller, John J., & Co., ... 595
Kennedy, Thos 610
Kenyon, D. R. & Son. 607
Keystone Knitting Machine Mfg. Co. . 6 9
Kilburn, Lincoln & Co., ... 434

	page
Klauder-Weldon Dyeing Machine Co.	602
Knapp, C. H.	440
Knause Bleachery	590
Koechl, Victor, & Co,	598
Krout & Fite Mfg. Co.,	585
Kuttroff, Pickhardt & Co.	454
Kitson Machine Co.	423
Kupstein, A, & Co., Outside Back Cover	600
Lamb Knitting Machine Co.	620
Laminar Fibre Co.,	443
Lane, W. T. & Bro.,	444
Lee's College	574
Leffel, James, & Co,	622
Leigh, Evan Arthur,	434
Leighton Mch. Co.,	—
Leisenring Mfg. Co.,	442
Lever, Oswald	431
Lewis, H. F. & Co., Ltd.,	599
Lincoln Company, The	601
Link Belt Machinery Co.,	430
Lockwood, Greene & Co.	574
Loom Picker Co.,	439
Lorimer's, Wm. H. Sons Co.,	590
Lowe, S. C.	425
Lowell Machine Shop,	418
Lowell Textile School,	573
Malcolm Mills Co.,	582
Manufacturers' Supplies Co.	619
Mason, Daniel	584
Mason Machine Wks.,	420
Matheson, & Co., Wm. J.,	594
Mayo Knitting Machine & Needle Co,	619
McGuire, John A., Co.	451
McKerrow, H. G.	424
McMichael & Wildman Mfg. Co.	610
Merchant Sample Card Co.,	444
Merrow Machine Co.,	617
Mianus Elec. Co.,	449
Mitchell Jas. E., & Co.,	581
Molt Bros.	596
Montgomery, J. R., Co.,	580
Monument Mills,	578
Moore, C., & Co.,	581
Morgan, E. A.	581
Morley Button Mfg. Co.,	435
Mueller, A.	620
Murray, C. O.	448
Nanz & Co,	442
National Mercantile Agency	444
National Mill Supply Co.	437
National Ring Traveler Co., The	435
New Bedford Textile School	573
New England Butt Co.,	438
New England Cotton Yarn Co ,	579
New England Ventilating & Heating Co.,	605
New Process Raw Hide Co.,	448
N. Y. & Boston Dyewood Co,	600
N. Y. Oil Cabinet Co.,	572
Nye & Tredick,	610
Oakes Mfg. Co,	596
O. K. Soap Co.	588
Orswell Mills,	580
Page Needle Co.,	619
Parks & Woolson Mch Co. Outside Back Cover	
Pawtucket Dyeing & Bleaching Co.	584
Paxton & O'Neill,	616
Pearson, J. T.,	616
Pepper Mfg. Co.,	614
Philadelphia Drying Machinery Co.	430
Philadelphia Textile Machinery Co.,	429-605
Philadelphia Textile School,	573
Phila. Textile Specialty Co.	602
Phillips, The Thomas, Co,	624
Plummer, F. O ,	449
Pocasset Worsted Co.,	576
Pond Lily Co., The	590
Popham, Henry & Son	448
Potter, E. V. B.	436
Praray, C. A. M. & Co.,	574
Providence Mills Company	587
Ring Frame Thread Protector Co.,	446
Replogle Governor Works, The	622
Roessler & Hasslacher Chemical Co,	593
Ross, Hugh R.	427
Ross, W. A, & Bro.,	586
Rowland, Sam'l	590
Rusden Mch. Co.,	451
Ryle, William. & Co.,	584
Saco & Pettee Machine Shops,	428
Saginaw Mfg. Co.	604
Salkeld, A. D. & Bro.,	583
Saranac Electrical Mfg., Co.	445
Sargent's, C. G., Sons,	439
Scaife, W. B. & Sons	438
Schofield, Geo. L.	565
Schoellkopf, Hartford & Hanna Co.,	595
Schoon & Crabtree	582
Schneebeli, G. A. & Co	566
Scott & Williams	616
Seaboard Air Line	574
Sharpless Dyewood Extract Co.,	596
Siggers, E. G.	455
Simplex Time Recorder Co.	572
Skerry, A. T, & Co,	585
Slack, Wm. H. H. & Bro.	588
Smith, Jas , Woolen Machine Co.	450
Snyder, Homer P. Mfg. Co.	618
Solis, Andrew J. Jr., & Co.	620
Southern Bobbin Co.	436
Southern Railway	574
Stafford & Holt,	613
Stamford Mfg. Co.,	597
Stearns, A. T, Lumber Co,	604
Stein, Hirsch & Co.,	599
Stephenson Mfg. Co.,	448
Sturtevant, B. F. Co., Inside Back Cover	
Sweet & Doyle	447
Sykes & Street,	597
Taunton-New Bedford Copper Co.,	605
Taylor, Jas.	613
Taylor & Stinson	564
Tebbets, E. L. & Co.,	437
Thayer, Edward M.	596
Thun & Janssen	562
Thurston, A. G. & Son,	437
Tompkins Bros.,	618
Torrance Mfg. Co.,	—
Townsend, Thomas	436
Treat, Orion,	619
Tucker & Cook Mfg. Co.,	581
Tucker Stop Motion Co.	438
Union Button Sewing Mch. Co.,	621
United Indigo & Chemical Co., Ltd ,	598
United States Finishing Co.,	586
United States Mineral Wool Co.	606
United States Rocking Grate Co.	623
Universal Winding Co.,	445
Victor Shuttle Check Co.,	451
Vila, H. S.	599
Wagner, M. & Co.	575
Walcott & Campbell Spinning Co,	580
Walder, J.,	436
Walrus Fibre Mfg Co.,	442
Ward & Vandegrift	436
Wardwell Needle Co.,	619
Warren Bros. Co.	437
Warren Co., The	602
Warren, W., Thread Works,	578
Watson, L. S, Mfg. Co,	434
Weimar Bros.	585
Wells, Wilfred	615
Whitcomb, H. C, & Co,	572
Whitin Machine Works,	422
Whitinsville Spinning Ring Co.,	435
Whiton D. E. Machine Co.,	623
Whittier Mills,	584
Willcox & Gibbs Sewing Machine Co	616
Wilmington Oil Co.	624
Wolhaupter, D. P.	485
Woolford, George,	604

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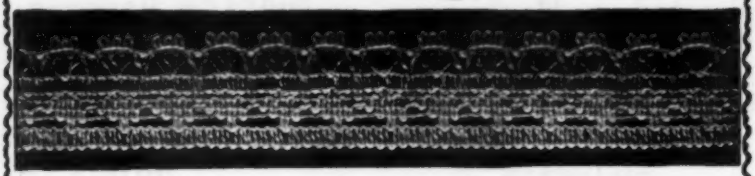

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Any subscriber may file his application, and no charge is made until position is secured.

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The applications of good overseers in every department, who are in want of positions are solicited.

Manufacturers are invited to use this department when in need of skilled men; each case will be handled confidentially, with promptness and judgment, and without charge to manufacturers.

WOOLEN SUPERINTENDENTS.

1829 **Woolen Supt.**, or asst. or dyer. Age 35; American; married. Has worked on kerseys, coverts, worsteds, cassimeres, etc. Is familiar with Davis & Furber jackets and mules, and Crompton & Knowles.

1916 **Agent or Supt.**, who understands designing and also the work of every department, is open to a position. Has been a superintendent for the last 15 years, and is thoroughly competent to take charge of a large mill. Scotch-Irish; 38 years old; married. Has turned out all classes of woolen and worsted goods in all wool and in wool substitutes. Is well up in the mixing and blending of stocks. References of the best.

1890 **Manager or Supt.** of a woolen mill, who understands designing, is open to an engagement. 34 years old; Scotch, and single. Large experience in Scotch and Canadian mills on tweeds, worsteds, overcoatings, etc. Good references.

1891 **Supt. of Woolen or Worsted** Mill, who understands designing, is open to a position. 23 years of age; an American; single. Well recommended, and with good experience.

1823 **Supt., Designer or Overseer** of weaving. Age 41; E. gli-h; married. Large experience on fancy cassimeres, cloakings, beavers, meltons, plaid backs, golf caps, rugs union worsted suitings and government work, flannels, face-finished goods, and can make them up from the yarn. Is familiar with Crompton & Knowles and English looms.

1398 **Woolen Superintendent or Designer** of recognized ability and at present employed as a superintendent of 36 set woolen and worsted mill. He finds it necessary to remove from New Jersey on account of his wife's health. His past record is first-class and this is an unusual opportunity to secure the services of a first-class superintendent.

1575 **Assistant Supt. Woolen.** A graduate of the Philadelphia Textile School (highest standing), and has had more than 7 years' experience in the various departments of a Massachusetts mill. Wants to get a start where there is fair chance of advancement. Age 28, single.

1856 **Supt. Worsted Yarn Mill.** 35 years old; Scotch; married. All kinds of worsted yarns in the gray mixures and mottled, especially fine numbers. Bradford system.

COTTON SUPERINTENDENTS.

1877 **Agent or Treasurer.** Good references. Recently assistant manager of a large mill. Fully competent.

1806 **I would like** to correspond with some president or manager of some cotton mill now running or any new mill now being constructed, who would like to engage with a cloth mill of any number of spindles not exceeding 10,000. My price is $1,000 a year, with no loss of time. I am a practical manufacturer, of long experience as overseer and superintendent. I am a good manager, full of push and energy, and I have a good record as a hustler for big productions and making money for my employers. Strictly temperate.

1918 **Supt. of Cotton Yarn** or plain cloth mill is desirous of obtaining a position. Is a native of Georgia; 29 years old; married. A splendid manager of Southern help and has worked in every department of a cotton mill on all good makes of machinery. Can refer to several large cotton mill owners.

1867 **Assistant Manager** who understands the handling of cottons and linens, desires position in a cotton mill. 24 years of age; American; unmarried. Can satisfy anyone in regard to references, experience, etc.

1806 **Supt. of a Cotton Weaving Mill**, colored or white, 5,000 to 10,000 spindles; or overseer of weaving in a cotton mill, on any kind of work and any size mill, white or colored. Will go East, West, North or South, Canada or Mexico. Has had good and long experience. A married man; 40 years old, strictly temperate. Can give references as to ability and character.

1527 **Supt. of Cotton Mill**, or overseer of mule or ring spinning is open to a position; 16 years experience in Northern mills, on yarns, denims, awnings, apron checks, bicycle suitings, shirtings, etc. etc. Familiar with all well-known makes of cotton machinery; 29 years old; American; married. Can give references from large Massachusetts mills.

1898 **Cotton Supt.**, 33 years old, married, and an American, experienced on coarse and fine yarns and white goods, is open to a position. Conversant with all standard makes of cotton machinery. Can refer to prominent Mass. men in the cotton trade.

1896 **General Manager** and Superintendent of cotton mill desires position; 37 years old; single; English. 18 years' experience on yarns, flannelettes, denims, grays, and shirtings. Good references.

WOOLEN CARDERS.

1798 **Boss Carder,** or carder and spinner. Age 49; English. Large experience on fine, medium and coarse wool, also wool, cotton and shoddy mixes, cassimeres, flannels, blankets, kerseys, meltons, beavers, government goods, etc. Excellent references and first class man in every respect. Was nine years boss carder in England and has held good positions in this country as boss carder and spinner.

1899 **Worsted Carder.** 9 years in large mill in Lawrence, would like a position; 23 years old; English; single. Has worked on almost all grades of stock, and understands all well-known makes in worsted cards. Good references.

1903 **Boss Carder,** woolen or worsted mill, desires a position. Experienced on fine and coarse work; 27 year of age; American; married. Can refer to responsible parties Moderate wages desired. Will go to any part of United States.

1827 **Overseer of Woolen Card** Room. Has worked on blankets, robes, friezes, cheviots, kerseys, flannels, knit goods, cassimeres, hair lines and unions. Age 34; American; married. Wants not less than $3.00 per day.

1660 **Overseer of Woolen Carding.** Does not want to go out of N. E. States. Age 48; American; married. Many years' experience as overseer and has excellent references. Has worked on nearly every class of goods manufactured in N. E., and is familiar with nearly all machinery.

COTTON CARDERS.

1886 **Overseer of Cotton Carding;** 31 years of age; married; of English parentage; desires position in the Middle, Atlantic or New England States. Familiar with Lowell, Pettee, Biddeford, Woonsocket, Whitin, Mason and all makes of pickers of above machinery. Good references.

1893 **Boss Carder of Cotton.** 38 years old; married; an American; who can also handle a weave room of from 300 to 500 looms, wishes to make a change. Has had over 15 years' experience in New England mills. Best of references.

1919 **Overseer Cotton Carding and** Spinning, who has had an experience of over 10 years in N. E. and New York mills, is open to a position. 26 years old; American; single. Thoroughly competent and reliable. Best of references.

1884 **Overseer of Cotton Carding.** 42 years old; French; married; desires a position in any mill north of Pennsylvania. Long experience in several large New England mills. Familiar with all makes of English and American machinery. Best of references. Has one son in family third hand in card room.

1759 **Overseer of Carding Room.** Age 26. Has worked on fine and coarse yarn, and understands all makes of machinery in carding Good manager of help by speaking different languages. At present overseer in a small mill. Excellent reference as to character and ability. Wants from $3.00 to $3.50 per day.

958 **Overseer of Cotton Carding.** 41 years of age; American; married. Understands all makes of English and American carding machinery. Can do his own grinding in a small mill, if necessary. Best of references.

WOOLEN WEAVERS.

1645 **Overseer Weaving.** Age 30; married, American. Has worked in weave room since he was 17 years old, as weaver, fixer and secondhand of weaving, except for a short time was traveling salesman. Has worked on ladies' dress goods, men's fine worsted suitings, overcoatings, cloakings, etc., on Crompton & Knowles and Jacquard looms. Excellent references.

1878 **Woolen** Overseer of Weave room. American; married. Very large experience in New England mills, on union cassimeres, chinchillas, dress goods, meltons, kerseys, fancy woolen suitings, and government goods, also fine fancy worsted suitings. Knowles & Crompton looms. A 1 references.

1482 **Weaver or Wool Sorter.** Has worked on cassimeres, cheviots, tricots, kerseys and cloakings. Good references.

1688 **Overseer of Weaving** in large mill, designer in small mill, or assistant designer in a large mill. Age 38; German; single. Has worked on beavers, chinchillas, fine cassimeres, fine fancy worsteds, ladies' dress goods, army goods, union cassimeres and other classes of goods. Strictly temperate and industrious.

1805 **Boss Weaver.** Has worked on fancy dress goods, cashmeres, ginghams, fancy worsteds, coatings, lenos and Jacquards. Has also some knowledge of designing. English; age 36.

1907 **Boss Weaver** or boss weaver and designer of woolens Also understands loom fixing. Would take a position in the West. Famil ar with all plain and fancy woolen looms. Age 33; American; single. Is strictly temperate. Best of references.

COTTON WEAVERS.

1806 **Wanted a Situation** as Boss Weaver or Second Hand, on any kind of plain weaving in cotton, wool, or jute mill. Has had 10 years' experience as boss weaver and 15 years experience as second hand and loom fixer. Am a married man, sober, steady, a good manager of help and a hustler for good productions. Can give good references as to ability, sobriety, and character. Will go to any part of U. S., Canada or Mexico.

1738 **Overseer of Weaving,** Drawing-in, Warping, Slashing, and all preparations, 14 years experience in colored mill in Manchester, Eng., and two years in this country. Age 37; English; married. Has worked on sateens, drills, dress goods, zephers, turkish towels, and can pick out own pattern for weaving and drawing-in. Understands the different makes of looms. Wants $3.00 per day.

1879 **Overseer of Weaving** or Assistant Supt. 17 years' experience in New England cotton mills, having charge of 1300 looms for 6 years recently. Fine and coarse goods on all well known machinery. Best of references.

1826 **Wanted by Steady, Industrious** man, a situation as overseer, in Tape mill. Has had considerable experience, but does not know everything, but willing to improve. $2.25 per day. Has been overseer a short time, and has perfect control of help. Age 46; English; married. No family. Would go anywhere, and settle.

WOOLEN SPINNERS.

1691 **Boss Spinner.** Large experience in first-class N. E. mills on flannels and all kinds of fancy cassimeres. Englishman; age 50; married. Refers to past employers.

1784 **Worsted Drawer and Spinner.** Would take twisting. Age 2>; English; single. Can furnish references as to ability and character.

633 **Woolen Mule Spinner** desires to move from Maine on account of wife's health. At present in good position. Age 37; married, Scotchman.

1862 **Overseer of Spinning.** Is used to Johnson & Bassett, Davis & Furber and Campbell & Clute machines. Has had 18 years' experience as an overseer. Is a handy man, and can give good references. Wool, cotton and mixtures.

1912 **Boss Worsted Spinner** on cop and fiver frames, who is also familiar with spooling, reeling, skein winding and dressing, is open to a position. Thirty-three years old; American and single. Has had 19 years' experience in one of the largest worsted mills in N. E., making yarns from 1 ⅛s to 56s from domestic and foreign wools. Has also handled mohair and camel hair. Good references.

1917 **Overseer Woolen Spinning.** Is thoroughly competent to take charge of a large spinning room. 38 years old; French; married. Has spun yarns for flannels, tweeds and knit goods, also cotton and wool mixes, shoddies, ranging in all from ½ to 14 runs. Is familiar with Davis & Furber, Johnson & Bassett, Platt and other makes. Very satisfactory references.

COTTON SPINNERS.

1068 **Overseer of Frame Spinning.** Twisting, Spooling and Warping desires position and would accept that of second-hand. Has worked in some of the best mills in N. E. (37 years old, an American and single) on Nos. running from 4s to 80s. Is familiar with Whitin, Mason, Biddeford and Lowell machines. Will go to any of the N. E. or Middle States. A1 references, and does not expect a fancy price.

1869 **Overseer or Second Hand** of ring spinning, cone winding, twisting, spooling, cop winding, reeling. 37 years of age; American; single. Of good experience on fine and coarse cotton yarns. Competent and reliable and used to handling all the well known makes of machinery. Will go anywhere. Good references.

1915 **Overseer of Ring Spinning,** or carding, would like a position in a cotton mill. Is familiar with fine and coarse yarns and almost all Amer can machinery. An American; 33 years of age; married. Best of references.

1889 **Boss Spinner of Cotton.** 30 years old, American; married. Familiar with all classes of hosiery yarns and all makes of machinery; 16 years' experience. Wages expected $125 per month. Best of references.

DESIGNERS.

1445 **Designer or Finisher,** or will take position as supt. of a small mill. German; Protestant; age 36; married. Has worked in several New England mills, and refers to them. Graduate of the Werden Textile School, Saxony. Has worked on kerseys, beavers, cassimeres, cheviots, etc. Is familiar with all makes of American and German machinery.

1838 **Designer,** assistant supt., assistant designer, overseer of weaving, secondhand large weave room, loom fixer, boss spooler, dresser, or mender Age 48; American; single. Worked on worsteds, cassimeres, dress goods, blankets, chinchillas, cloakings, etc All patterns of Crompton & Knowles looms, Davis & Furber spooling, dressing and weaving machinery, and Worcester warp compressor.

1888 **A German Designer,** who understands all machinery necessary for the manufacture of men's wear, woolen or worsted, is open to a position at $3000 per year. Eight years' experience in Germany and five years' in one of the largest mills in the United States. 33 years of age, and single. Best of references.

1897 **A Young Man,** 28 years of age, competent to handle the designing for a cotton or silk mill, would like a position. Has made in cotton, plain, fancy and leno; in silk, tie silks, dress goods and linings. Looms, all well-known makes. Is Scotch, and single. 14 years' experience in weave room and designing room. Good references from N. J. and Conn. mills. Four workers in family—weavers.

1837 **Designer** in small mill, or assistant in large mill. Age 25; Scotch; single. Has worked on fancy cassimeres, plaid backs, coverts, unions, worsted trowserings and shirtings. Fair knowledge of Jacquard designing. Johnson & Bassett mules, Davis & Furber dresser, and Knowles looms. Is willing to work for moderate salary, with chance of promotion.

1789 **Designer,** or assistant supt. and designer. An A1 color designer. Can get up good line of fancy woolen and worsted goods which will be good sellers and profitable to the manufacturer. Graduate of a prominent designing and textile school in Germany. Is well posted on all kinds of stock, cotton and shoddy, and with the general work of a woolen mill.

1652 **Overseer Cotton Weaving.** Worked on about all kinds of cotton goods. Age 41, American, married. At present employed in the South, but wants to change for a healthier locality. Refers to present and past employers.

1599 **Assistant Designer.** A young man who is studying woolen and worsted designing would like an opportunity to get practical experience, and will accept very small wages. Has worked in mill for two years as weaver on Crompton & Knowles looms. Excellent references as to character.

1685 **Boss Dresser or Assistant Designer.** Has taken a thorough course in designing, and is well up in calculations and in the making of fancy men's wear goods of all kinds. Has worked in Scotland and three years in this country. His knowledge of yarn calculations and practical experience as dresser tender makes him well fitted to fill a position as boss dresser and to run a room in an up to date and efficient manner, or to fill a position as designer or assistant.

KNITTERS.

1889 **I would like** to correspond with some presidents of some cotton mill or large hosiery mill now running, or any new mill now under construction or proposed as to position of manager. I am a practical manufacturer of long experience and have just finished building and equipping one of the largest hosiery mills in the South. I am well posted on the manufacture of hosiery yarns and hosiery of all grades. Non paying mills can be put on paying basis under my management, if conditions are possible. Only object in leaving present position as general manager is climate is against his health.

1777 **Overseer of Knitting.** Has worked on ladies' and infants' underwear. Standard makes of machines. Will not change for less than $18. Age 33; American. Refers to past employers.

1906 **Supt. or Agent** of a hosiery mill is open to a position. Thoroughly understands spinning, dyeing and is familiar with all well-known makes of knitting machinery. American; 24 years old; single. Has been superintendent for the last seven years in a large plant. Best of references.

1744 **Fixer.** Age 24; American; married. Is familiar with Boss, Invincible, McMichael & Wildman, Brinton, Denny and Victor machines. Wants $15 a week.

1905 **Boss Knitter,** age 26 and married, with six years' experience on all kinds of Jersey ribbed knit ladies' underwear, would like to secure a position as foreman knitter in a small mill in Pennsylvania, or as assistant in a large one. Practical experience on Nye & Tredick, Stafford & Holt, McMichael & Wildman, Brinton and Champion rib machines; understands all kinds of sewing machines and repairs, also boilers and can run them on economical plan. Can do machine repairing in general, having had early training as machinist. Is strictly temperate, and can give references.

1831 **Boss Knitter** on circular latch needle machines, making ribbed underwear, or spring needle work made on Tompkins machine. Also a practical wool carder of about eight years' experience as overseer in underwear and shoddy mills. Understands raw stock and how to handle it so as to give best results. An American, steady and reliable. Age 36.

1554 **Boss Knitter.** Underwear, Jersey ribbed, lisle, wool plaited work, silk. Can handle any latch machine. Good references. Age 26; married.

1824 **Boss Knitter or Fixer** on ribbed underwear. Has worked on fancies, double knees and tops and plain work. Is familiar with Brinton & Denny, McMichael & Wildman, Huse and Pepper machinery. Will work for $2.50 or more, according to position.

1776 **Boss Knitter.** Had constant experience in the knitting business for the past twenty years. Can handle any kind of goods made on a circular spring needle knitting machine. Age 36; American; married. Excellent references.

1920 **Supt. of Glove Factory** or knitting mill who understands the making of fabric gloves of silk, cotton, cashmere, and also knit gloves and mittens. 44 years of age; German; married, and has four workers in family, who understand glove sewing, pointing, etc. Has held responsible positions, and is a good manager. Can refer to some large establishments in New York and Chicago.

FINISHERS.

1792 **Boss Finisher,** with over 20 years' experience on all kinds of woolen and worsted goods. Learned business in one of the best woolen mills in Scotland and has also had experience in some very good mills in this country. Strictly temperate and steady, and can give good references as to character and ability. Wants position in a good, steady-running mill at once. Age 38 years; married.

1887 **Overseer of Finishing** in a cotton or worsted mill, having several years' experience on cotton flannels, shirtings, blankets, crashes, cotton and worsted dress goods, and carriage cloths, is open to a position. 25 years of age; American; married, and strictly temperate. Will go to any part of the United States, except West. Best of references.

1902 **Overseer of Finishing,** 16 years' experience on woolens, worsteds and cottons, would like a position in Mass. or R. I. mill. 42 years old; American; married. Two boys in family who can run shears and press. Good references.

1900 **Boss Finisher** of men's wear, ladies' dress goods, worsteds, cassimeres, kerseys, cotton and woolen mixes, who has gained his experience as finisher in some of the large English and American mills, is open to a position. Is familiar with all standard makes of finishing machinery; 48 years of age; Scotch; married. Can refer to well-known men.

1909 **Boss Finisher** of worsted, woolen and cotton dress goods, and an expert examiner, would like a position. 25 years old; English. Long experience, and can refer to some of the largest finishing establishments in the East. One worker in family.

1804 **Overseer of Finishing.** Wants to change on account of town he is in. Is familiar with all kinds of woolen and worsted machinery, and has worked on kerseys, cassimeres, carriage cloth, worsteds, dress goods, shawls, etc. Age 35; American; married. Wants $3.00 per day. Excellent references from past employers.

1770 **Overseer of Finishing,** or would take secondhand position in large mill. Age 35; married; American. Cassimeres, cheviots, kerseys, meltons, chinchillas, dress goods and cloakings. Is familiar with all makes of machinery in woolen mills.

1771 **Boss Finisher,** or would take good secondhand position. Has worked on all classes of goods. Age 53; Scotch; married. Reason for his wishing to change is on account of mill where he is now employed not running steadily.

1437 **Overseer of Finishing** desires a position in a woolen mill. Is familiar with chinchillas, kerseys, cassimeres, dress goods, casket cloths, worsteds, etc; 33 years of age and single; steady and industrious, and can give good references.

1911 **A Boss Finisher** of over 20 years' experience on cassimeres, flannels, dress goods cloakings and worsteds, is open to a position. Understands Parks & Woolson, Curtis & Marble, Hunter, Miller Press Co., Rodney Hunt and other machines. Married; 44 years old, and can give good references. Over 15 years in last place.

1921 **Boss Finisher** of a satinet mill or secondhand of a woolen mill, would like a position. Has held these positions in good sized mills, and is familiar with satinets and woolens. 23 years of age; American; single. Good references as to steadiness, reliability and quality of work.

DYERS.

1846 **Boss Dyer** or Bleacher. Age 28; English; married. Has worked on mostly all kinds of dyed and bleached goods. Understands indigo blues and alizarine colors for bleaching and fulling purposes on cotton goods. Wants to change as place he is in does not agree with him.

1303 **Manager of Dye Works,** or boss dyer, who has been connected with some of the largest dye houses both in England and the United States is open to a position. Understands piece dyeing of all kinds, cotton, wool, mohair and alpaca; pile fabrics; knit goods, wool and cotton; yarns, wool, silk and cotton; raw stock; and wool and merino shoddies Is 36 years old; English; married. Good references from a number of prominent men in the textile industry.

1839 **Boss Dyer,** English, age 35, married. Has been boss dyer for 14 years in this country and England on all classes of woolen and cotton warp goods, such as cashmeres, cloakings, and shoddy, and is well up in dyeing light shades out of dark stock. Understands worsted piece dyeing, raw stock and worsted yarns. Steady and reliable, and best of references. Would work for fair pay.

1913 **Boss Dyer** or secondhand, who has had over 25 years' experience in large woolen mills in N. E., is open for a position. 44 years of age; married. Is familiar with cotton, woolen and worsted yarn dyeing for cassimeres, dress goods and trowserings; also piece dyes and raw stock. Best of references.

1908 **Boss Dyer and Bleacher.** Age 25; American; single Now employed, but will change for good job. Best of references from present employers.

1894 **A Competent** cotton dyer, experienced on long chain, short chain, skein yarn, and raw stock, is open to a position. Age 48; Scotch; married. Will accept reasonable wages. Has good references.

1883 **A Boss Dyer** who understands cotton and wool raw stock dyeing, piece dyes, knit goods, and has had large experience on cotton skein yarns for the webbing trade, is open for a position. 38 years old; married, and an American. Will accept a reasonable salary.

1809 **Boss Dyer.** Age 33; American. Wants $3.50 per day or more. Wants to change on account of locality. Has worked on fancy cotton yarns, mohair novelty yarns, worsted yarns, raw cotton, raw wool, piece dyes on flannel, mixed cotton and wool and all wool, kerseys and beavers and beavers with cotton warp.

1860 **A First-Class Boss Dyer** wants position. 50 years old; German; single. Has managed some large New England dye houses and is familiar with worsteds, woolens, mohairs, knit goods, pieces, yarn, slubbing, loose wool, carpet yarns and cotton yarns Will go anywhere and can give references that will satisfy anyone as to his ability.

1846 **Boss Dyer** or bleacher. Age 28; English; single. Has worked on mostly all kinds of dyed and bleached goods. Wants to change as place he is in does not agree with him.

MISCELLANEOUS.

1803 **Roll Coverer.** I have done the work for a number of the largest cotton and worsted mills in this country, and am well known throughout the trade Have been in the business 35 years, and can furnish stock and tools. Would be glad to take piece work, if shop is furnished, or would take a place by the day. Can furnish best of references.

1762 **Chemist.** Age 23; American. Wants a position in dye works, print works or bleachery. $15 a week to start on. Excellent references.

1835 **Beamer, Twister,** also understands drawing in and splitting. Age 27; American. Has worked on ginghams, dress goods, shirtings and cotton worsted.

1851 **Machinist in Woolen Mill.** Can repair looms, cards, mules, etc., of every description, also worsted machinery. Understands forging tools and has fair knowledge of electricity. Ten years experience in some of the best mills in New England.

1873 **Wanted** situation as Master Mechanic in cotton corporation. Has had large experience. Middle aged; strictly temperate. A graduate of a technical school. Learned carpenter's trade and machinist's.

1895 **Shipping Clerk** and Bookkeeper, familiar with mill office work, would like to take a position as such in any part of United States. 21 years of age; single; an American. Best of references.

1865 **Machinist and Fixer.** Has had eight years' experience. 34 years old; English; single Is thoroughly familiar with Singer, Wheeler & Wilson, Merrow, Union Special, Lamb, Pepper, and Hepworth and Beattie loopers

1873 **Master Mechanic** in cotton corporation. Has had large experience. Middle aged; strictly temperate. A graduate of a technical school. Learned carpenter's trade and machinist's.

1866 **Overseer of Burling** and Sewing or Cloth Examiner in commission house. Have had 25 years' experience in the cloth room and can handle any class of woolens or worsteds, either dress goods or men's wear. 41 years old; Irish; married. Best of references. Have a son 19 years old who is a percher and brusher.

1914 **A Young Man** who thoroughly understands the keeping of mill books would like a position in the South ern States or would go to Cuba or Puerto Rico. Is a first-class man and perfectly familiar with general office work. An American; 22 years of age; single. Steady and reliable, and can give good references.

1910 **Loom Fixer** on Knowles, Crompton, Stafford, Whitin, Mason, Colvin and other looms, would like a position. Has made golf cloths, plaid backs, fancy dress goods, viennas, kerseys, etc., also cotton lenos, leppets, novelties and plain goods. American; 38 years of age and single, steady and reliable, and can give satisfactory references.

1473 **Overseer Steam Gigging and** Boiling. Has worked for many years in large mills. Would accept $2.50 a day at start. Age 33, married.

1489 **Boss Finisher.** Second hand or Boss shearer. Well experienced; excellent references. English; age 27; single.

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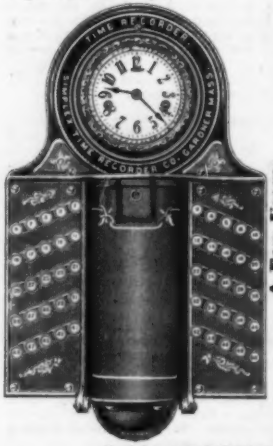

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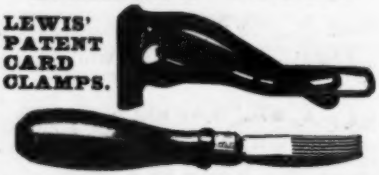

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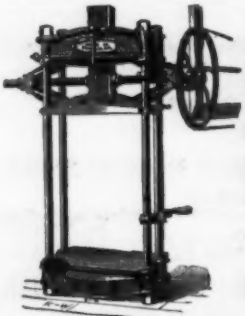

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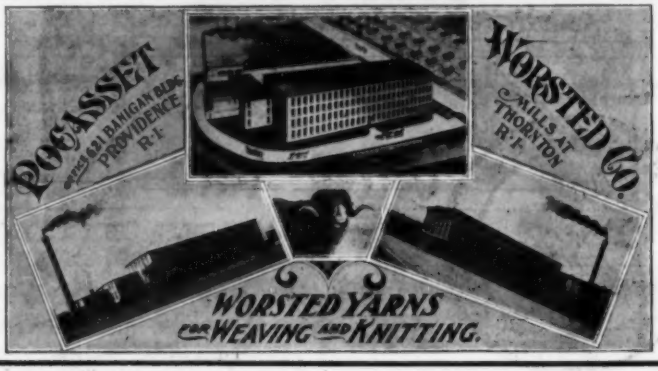
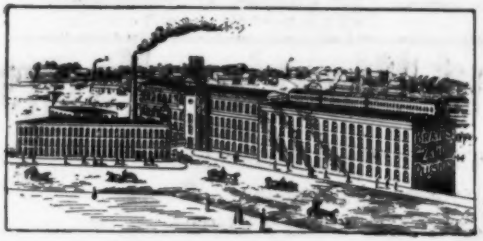




FLYER SPUN

Mohair and Worsted

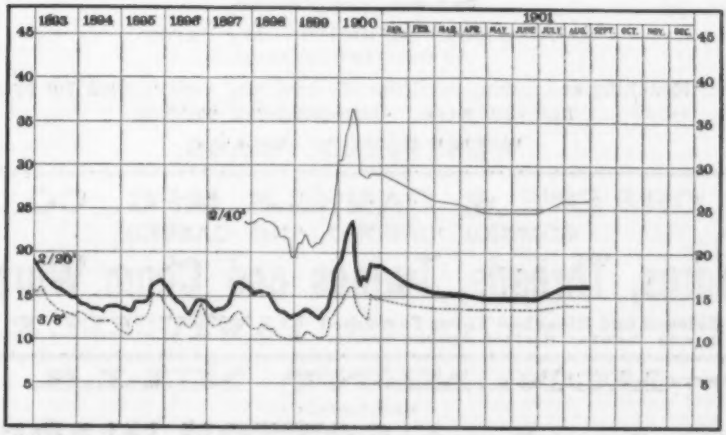
YARNS.

Mohair Plushes,
Worsted and Cotton Braids.

D. COFF & SONS, Pawtucket, R. I.

ESTABLISHED 1861.

YARN DEPARTMENT.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

Cotton Yarn Market.

The demand for yarn has improved somewhat, but has not yet caused any advance in prices. The stock of yarn is too large for values to readily respond to improved conditions on Eastern yarn, prices are steady, due to the absence of stocks on hand. If buyers call for yarn that is not yet spun, they find it necessary to pay a living price for the goods. This is unfortunately not the case with Southern yarns. It is reported that knitters have purchased freely of Southern yarns in order to meet the low prices for goods. The knitting mills have curtailed production to a great extent, and this has in a measure offset the reduction of output from Southern yarn mills.

Production of cotton goods, particularly the low grades, is so far in advance of the consumer's needs today that a foreign market or a shut down offer the only permanent remedies. Many grades of yarn are selling at a loss, and the demoralized market for print cloths indicates that the manufacture of low grade woven cloths has been overdone.

EASTERN YARN.

Mule Spun on Cops.

10s	14½ to 15½
12s	16 to 16½
16s	16½ to 17
18s	17 to 17½
22s	17½ to 18

Eastern Mule Skeins.

10s	15½
12s	16½
18s	18
22s	18
16/2	18
20/2	19½
30/2	22½
40/2	26
50/2	32
60/2	39

Eastern Mule Yarn on Cones.

10s	16¼
14s	16¾
16s	19¼
18s	17½
20s	17¾
22s	18¼

Philadelphia Yarn Market.

The market on yarn has been very sensitive the past month, but there is a decided improvement in the demand the past few days, especially in knitting yarn, and spinners are holding for higher prices on account of the strong cotton market. Prices on nearly all yarns have been below cost. Spinners have hoped that cotton would be bought cheaper; if it cannot be, then yarn must advance for any future business. We quote as follows:

Southern Warps.

14s to 16s	14 to 14⅛
20	14½
26	16
14/2	14¼

W. Warren Thread Works,

SPOOL COTTON
on 100 to 12,000 yd. Spools or Tubes.

A Specialty of Thread for Manufacturers Use
on Spools, Tubes or Bobbins.

Also Seaming and Hosiery Yarns
on Cones, Tubes or Skein.

Our bleaching and dyeing facilities are new and unsurpassed for prompt and neat work. Correspondence solicited.

WESTFIELD, MASS.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade. **PAWTUCKET, R.I.**

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double and Twist, **COTTON WARPS**

HOUSATONIC, MASS. 4s to 60s.

BARNESVILLE MFG. CO.

BARNESVILLE, GA.

HOSIERY AND UNDERWEAR YARNS,
Peeler, Bleached, Egyptian or any colors desired. Also,

FINISHERS AND BLEACHERS
of piece goods, underwear, towels, yarns, etc.

THE ONLY USERS OF JACKSON'S FORMULA OXIDIZED BLACK FOR HOSIERY.

We solicit your patronage. Work Guaranteed.

NEW YORK OFFICE and SALESROOM. 910 N. Y. Life Bldg., N. Y.

INDIAN ORCHARD COMPANY,

Indian Orchard, Mass.

Manufacturers of - - - -

COTTON WARPS AND YARNS
In gray and all colors, single or in any twist.

NOVELTY YARNS
In Cotton, Mercerised Cotton, Silk and Worsted, in various Patterns, Colors and Twists.

We are always pleased to assist our patrons of the Woolen Goods manufacture in special pattern warps for samples.

Carded and Colored Cotton for Mixing With Wool

Machined, or in Roving.

16/2	14½
20/2	15
24/2	16
26/2	17
30/2	18
40/2	23 to 24

Southern Skein

10s to 12s	14
14s to 20s	14½ to 15
22s	15
14/2	14½
16/2	14½
20/2	15
30/2	18
40/2	22 to 22½

Southern Frame Yarns.
Cones.

6s to 8s	12¾ to 13
10s	13½
11s and 12s	12¾ to 14
14s to 16s	14 to 14½
18s	14½
20s	15
22s	16

Woolen Yarn.

Spinners are busy with orders which will last at least three or four weeks. This business comes from underwear, hosiery and rubber boot lining mills; some weavers are still ordering yarn.

The business from the weaving mills will soon end when these mills will start on light weight cloth. The manufacturers of French flannels are using large amounts of yarns. The knitters both of underwear and hosiery are backward in placing orders for yarn, so that later the spinners will receive many orders from that source.

While the spinners have orders, they have only been secured after much work on the part of salesmen; at times it seemed as if these mills must shut down, and then orders would be found for them to continue.

In some instances knitters are busy and are ordering in yarn, but the instances "are few and far between."

Where a knitter has a specialty he is busy. We know of knitters who are making fleece lined wool underwear, who are very busy and ordering yarn freely, but the majority of the knitting mills are short of orders.

Some knitting mills have shut down entirely, while others are running part of the machinery from 3 to 5 days per week. This statement takes in all classes of underwear, cotton as well as wool.

The salesmen complain that many of the buyers are away on vacations; this in itself would check business, and again buyers of large concerns are only buying in dozen piece lots, and have no stocks on hand. They say that there is so much uncertainty as to prices, caused by a continual "cutting" that they do not dare place heavy orders until they know that prices have a fixed position.

New England Cotton Yarn Co.

NEW BEDFORD, MASS.

JAMES E. STANTON, Jr., Agent.

Branch Offices:

ALBANY: 38 State Street. . . . . E. A. VAUGHN, Manager.
BOSTON: 77 Bedford Street . . . . . J. B. JAMIESON, Manager.
NEW YORK: 346 Broadway . . . . . P. H. CORR, Manager.
PHILADELPHIA: 213 Chestnut Street . . . . P. H. CORR, Manager.

Mule Spun Hosiery Yarns,
Carded and Combed.

Colored Yarns,
Solid, Mixes and Randoms.

Spinners of Cotton Yarn

Frame Yarns,
Single and Twisted, Carded—Combed—Bleached

Fine Yarns,
For Electrical Purposes

All Numbers 4 to 200.

From
American Peelers, Sea Island, Peruvian and Egyptian Cotton.

BENNETT,
HOWLAND,
ROTCH,
N. B. SPINNING,
COHANNET,
NEMASKET,
GLOBE,
SANFORD,
} **650,000 Spindles.**

Entire product sold direct to consumers through the Company's own offices.

CAPACITY, 50,000 Spindles.

ORSWELL MILLS

FITCHBURG MASS.

COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

WILLIAM FIRTH, PRESIDENT. FRANK B. COMINS, TREASURER

AMERICAN MOISTENING COMPANY,

150 Devonshire St., Boston, Mass.

The "Drosophore" and "Vortex" Humidifiers.

Over 20.000 of our HUMIDIFIERS in operation.

Highest award on the Recommendation of The FRANKLIN INSTITUTE for

"SIMPLICITY and ORIGINALITY of DESIGN"

DANA WARP MILLS

Westbrook, Maine.

WHITE AND COLORED WARPS,

6s to 50s—Single and Ply.

MULE COPS,

from 30s to 50s from

AMERICAN AND EGYPTIAN COTTON.

The J. R. MONTGOMERY CO.,

WINDSOR LOCKS, CONN.

Manufacturers of

Mercerized Cotton Yarns. GIVES THE HIGH SILK-LIKE LUSTRE IN KNIT GOODS AND WOVEN FABRICS

Novelty Yarns. BOUCLE, BOURETTE AND SPIRALS, IN COTTON, WOOL WORSTED, MOHAIR AND SILK.

Cotton Warps. ON BEAMS, JACK SPOOLS AND TUBES. IN FANCY TWIST COLORS AND PRINTED.

It is believed that, if we have a cool October there will be more business than can be handled; those who are buying from hand to mouth, and are without stocks will find that the supply on hand is limited, and hence many rush orders will result.

As the knitters have neither a stock of yarn or material, many orders will be placed and an advance will surely follow. Notwithstanding the present dull period in this branch of the industry, there are few who do not believe that the underwear business is on a firm and healthy basis, and that within the next 60 days there will be many good orders placed.

It is stated that the trade is looking for a heavy feeling lofty garment instead of the worsted finish heretofore in demand, and much thread waste will be used to get the right effect; that is the reason some of the knitters who are running garnetts and using thread waste (imported) are so busy that they are running until 9 o'clock at night.

Some of the most successful manufacturers have abandoned the department store trade, as these stores are so low set in price that manufacturers are unable to produce even a fair quality of garment, as the stores are after impossible values; rather than spoil their reputations, manufacturers are refusing to sell them and are seeking the better class of jobbing trade.

The three articles which manufacturers ing the standard of their goods cannot be will consume in large quantity when trade starts again, are noils, natural black tops and thread waste. Noils are very scarce and are high in price. We know of one worsted spinner who sold his noils at a higher price than the cost of the original scoured wool.

The black tops are in demand, but there are some inferior grades on the market. Manufacturers think they are saving money by using the inferior article when in reality their loss by lower-estimated. The demand for Australian thread waste is increasing and there are many new mills putting in garnetts.

The reports of large sales of wool although doubted by some, has put new hope in the underwear manufacturers, and they all state that they are glad to hear of it, and hope that the manufactured article will follow the move of wool.

The situation is changed when we turn to the weavers. The weavers of cassimeres and outing flannels are very busy, especially the latter article, and it is to be regretted that the weavers of outing flannels are beginning to run down the

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67 Chauncy St., Boston
216 Church St., New York.
206 Chestnut St., Philadelphia.

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FANCY HOSIERY YARNS
IN ALL COLORS.
New York Mills, Oneida Co., - N. Y.

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COTTON YARNS
For All Purposes.
122 & 124 Chestnut St., PHILADELPHIA. 74-76-78 Summer St., BOSTON.
SOLE AGENTS FOR
Lawton Spinning Co., - Providence, R. I.

TUCKER & COOK MFG. CO
MANUFACTURERS OF
WHITE AND COLORED COTTON **WARPS**
Nos. 8s to 30s,
On Beams, Jack Spools or in Chain
CONWAY, MASS.

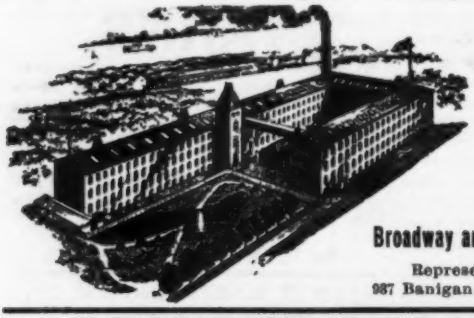
GRANT YARN CO.,
COMBED AND CARDED COTTON.
YARNS 40s and above. AND
FITCHBURG, MASS. **WARPS**

COTTON, WORSTED, WOOLEN, MERINO AND FRENCH SPUN YARNS
Mercerized Cotton a Specialty
Write for Samples.
E. A. MORGAN,
54-66 Franklin St., N. Y. City

LINEN YARN IMPORTER.
Hughes Fawcett, 115 Franklin St., New York,
Flax, Hemp & Jute Line and Tow Yarns,
FOR WEAVING PURPOSES
Linen Jacquard Harness Twines.
Fine Cotton Harness and Heddle Twines.
For Cotton, Silk, Woolen and Carpet manufacturers. Correspondence solicited. Samples promptly furnished.

C. MOORE & CO.,
MANUFACTURERS OF
TWINES, THREADS AND YARNS.
Jacquard Harness Twines of all kinds on hand and made to order.
S.W. COR. FIFTH & MARKET STS.,
Philadelphia.

HOWLAND CROFT, SONS & CO.



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Fine Worsted Yarns

OFFICE AND MILLS:

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Represented by FIRTH BROADHEAD,
937 Banigan Building, Providence, R. I.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co., MANFRS. OF

Worsted YARNS,

ALL NUMBERS SINGLE AND TWO-PLY,

Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes.

Office and Mills: Frankford Ave. and Westmoreland St., Phila., Pa.

CRANSTON WORSTED MILLS.

Worsted and Mohair Yarns — white or colors, in skeins, on spools, cones, or shuttle bobbins.

NOVELTY YARNS — of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making Yarns only.

CENAPPED YARNS of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

...Dyers of Yarn and Slubbing...

BRISTOL, R. I.

FRENCH SYSTEM. BRADFORD SYSTEM

B. F. BOYER CO.,

MANUFACTURERS OF

Worsted and Woolen Yarns

OFFICE AND MILL: Delaware and Cooper Streets. CA[illegible] J.

MALCOLM MILLS CO.,

MANUFACTURERS OF

Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.

Mills, Frankford, Pa. Office, 229 CHESTNUT ST., PHILA.

quality of their cloth. Instead of weaving the stripes in their cloth we find they are printing them on the goods, with the result that the first time the wearer of a suit of clothes get wet, he finds instead of a striped suit he has a plain one. This sort of business will kill the outing flannel after another season.

The spinners are all hopeful for the future, but are careful about buying material. With the demand for better goods much Australian waste is being offered which was raised in the territories, and the salesman who does not understand his business is apt to become mystified at some quotations.

Worsted Yarn.

Spinners of worsted yarn are busy, and weavers cannot get yarn fast enough to fill orders. The heavy weight business will last in many instances until November. The principal demand is for yarn out of which to make clay worsteds, undressed worsteds, serges and cheviots, all piece dyed fabrics.

Weavers are trying to bear the market, and on coarse quarter blood yarns are succeeding. They used the "cut" of the Woolen Trust as a lever to accomplish this end; while they succeed in some classes of yarn, in others spinners will sell no lower. Weavers are unable to understand how the woolen trust can offer Clays at the "cut" and come out of the transaction without a loss. Manufacturers also state that the cut was entirely unnecessary.

The idea this time, so it is said, was to capture the market on light weight Clay worsteds; to do this much wool was bought early in the season, and by making the low price they succeeded in selling up two or three of the company's largest mills. Afterward the price was advanced 5 cents per yard to make the buyers of this cloth feel satisfied, and to induce them to buy the light weight

A. D. SALKELD & BRO.
With
FRED'K VIETOR & ACHELIS.
YARNS,
68-72 LEONARD ST., NEW YORK.

Eddy & Street,
COTTON, WOOLEN, **YARNS** AND **BRAIDS** WORSTED, SPUN SILK.
PROVIDENCE, R. I.

TRY OUR
Silkine also Lisle Silk FINISH
For Hosiery, Knit Goods, Yarn, Fast Black, Harsh Colors and Fibres.
O. K. SOAP CO., 968 Franklin St., PHILA.

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MERCERIZED YARNS
Two and Three Ply, for All Purposes,
In Peeler, Egyptian and Sea Island, gassed and ungassed, natural and dyed. Fast Black for cross dyeing a specialty.
Through H. A. CAESAR & CO.

EICHMANN & STERNBERG
530 Broadway cor. Spring St., NEW YORK.
Mercerized, Turkey Red, Gassed } Cotton Yarns.
Jacquard and Harness Twines.

Buckingham, Paulson & Co.,
COMMISSION MERCHANTS.
COTTON YARNS of all Descriptions.
83 Leonard St., New York.
120 Chestnut Street, Phila. 530 5th Ave., Chicago. Ills
Cash Advances, Cash Sales and Prompt Returns. Consignments and correspondence solicited,

E. JENCKES MFG. CO.
Colored Cotton Hosiery Yarns, Double and Twist Yarns for the Weaving Trade.
PAWTUCKET, - R. I.

DEXTER YARN CO.
Cotton Yarns in Cops, Cones and Skeins; on Beams or Spools, Single and Twisted. Cable Cords and Twines.
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J BROADBENT & SONS,
Woolen Yarns
for Knitting and Weaving, al o Wool Spun Cotton Yarns. Equipment first class, practical experience, small expenses, and low prices. Will take work on commission.
UNIONVILLE, CONN.

CHENEY BROTHERS,

SILK MANUFACTURERS.

ALL KINDS OF

Knitting Silks, Ribbons AND Piece Silks,

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Spools or Cones, for Manufacturers' Use. Silk for Special Purposes Made to Order.

MILLS: South Manchester and Hartford, Conn.

SALESROOMS: 477, 479 and 481 Broome Street, NEW YORK.
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WILLIAM RYLE & CO.,

DEALERS IN

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

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DAN'L MASON,
Voorhis Mills, PATERSON, N. J.
BUYS JOB LOTS In colored and raw
SILK YARNS.
Cash Advances on Sales and Prompt Returns.

RICHARD CAMPION,
Selling Agent for—
Bristol Worsted Mills,
Highland Worsted Mills.
17 Bank Street, Philadelphia, Pa.

COTTON YARNS from 2s to 26s single and ply.
SPECIALTY—FIRE HOSE CORD and YARNS put up on tubes wound on Universal System.
WHITTIER MILLS, - - - - - SPRINGFIELD, MASS.

Pawtucket Dyeing & Bleaching Co., BLEACHERS AND DYERS OF
COTTON YARNS AND STOCKINET.
OFFICE WITH BLODGETT & ORSWELL CO., Manufacturers of Glazed Yarns,
232 FRONT ST., PAWTUCKET, R. I.

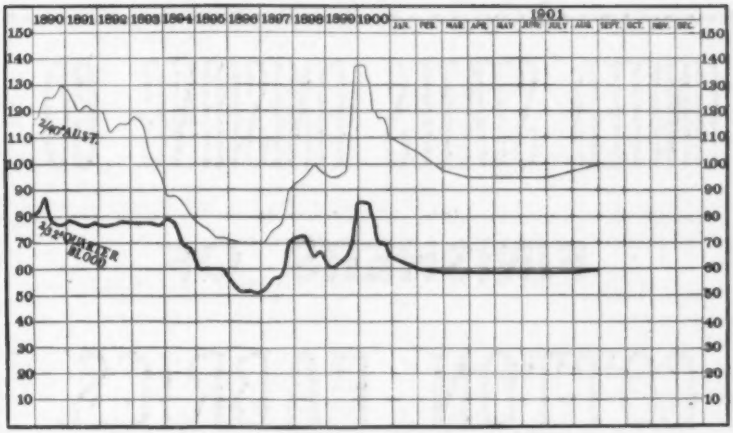

CHART SHOWING RANGES OF PRICE OF WORSTED YARN.

fancy worsteds, and at the same time hold out a bait to induce the independent worsted spinner to feel that he should advance his prices on his yarn, and thus prevent the weavers from securing orders for this class of cloth. This latter idea is not working out, however, as weavers tell spinners that, if prices are advanced, the business will be shut off.

There is no doubt that the spinner is having much more work than he can attend to, and many are wishing for an increased number of spindles with which to take care of the business. Those with more orders than they can handle have advanced prices, not because they expect business at the advance, but because they can take no more orders.

The light weight season has opened, and many orders have been booked. Weavers are placing orders for yarn because they believe that, as the season progresses, the price of wool will be higher and consequently yarn will be higher.

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO., 47 LEONARD ST., NEW YORK.

Telephone Connection.
KROUT & FITH MFG. CO.,
Manufacturers of
SILK and COTTON NARROW FABRICS
Spool Tapes a Specialty.
Office and Mill, Allegheny Ave. and Emerald St., PHILADELPHIA.

WEIMAR BROS., MANUFACTURERS OF
Silk, Cotton, Medium and Superfine, and Non-Elastic
BINDINGS.
Medium and Superfine Tapes a Specialty.
2046 Amber St., Philadelphia.

F. C. BARTON,
Manufacturer of
Narrow Fabrics, Ribbons, Tapes and Bindings
FOR THE MANUFACTURING TRADE.
Telephone, 2320 Franklin. 54-56 Franklin St., NEW YORK.

UNITED STATES FINISHING CO.

FINISHERS OF

COTTON FABRICS.

320 Broadway, New York City.

WORKS AT

NORWICH, CONN. PASSAIC, N. J. PAWTUCKET, R. I.

OWNERS OF

THE STERLING Dyeing & Finishing Co.'s Fast Black Plant

AT STERLING, CONN.

The worsted spinners are certainly coming into their own at this time, because the cotton worsted cloth is out of it, and the demand is for cloth made from straight worsted yarn; with the light weight season coming on, the outlook for the spinner is very bright if he does not advance prices beyond the point of reason. Many worsted spinners have either failed or gone out of business since there was a good demand for yarn, and it may be when we get to a normal basis, weavers will find it hard to secure yarn for their wants.

Undressed worsted cloth is having a good run and is displacing the serge, as it has a softer feel and is not so harsh as the serge which is being made now with almost if not quite a braid stock.

There is a good demand for 2/40s Australian also 2/50 and 2/60 for fancy and clay worsteds. There is also a good demand for warp yarn for clays, also single filling in about an X quality, which runs down to a half blood.

Some yarn is being used in 2/28 for cheviots in high quarter blood. The unfinished worsted is made from two grades of yarn, a higher grade of warp than filling and very good results are obtained. The dress goods trade is good and deliveries are being made on orders taken early in the season.

Most of the yarn in use for this class of cloth is about a high quarter blood stock in 2/36s for warp. The dress goods weavers are still trying for impossible prices. The bunting trade is slack as is always the case at this time of year, and manufacturers are buying only in limited amounts.

Top manufacturers are getting but few orders and are having a hard time to keep running. Some of the prices quoted are lower than the wool from which the top is made.

The French spinners are busy on yarn for dress goods and warps, but the knitters are ordering nothing although they are looking for business within the next 60 days.

The hosiery manufacturers, who generally get orders as early as June, are getting no orders at this time and are not trying yarn because they do not know what grade to order.

It is a queer business situation and it promises before the year is through to be good for all classes of manufactures with a firm wool market and a material advance in the price of wool and yarn.

2/40s Australian	95 to 1.05
2/40 delaine	85 to 90
2/40 half blood	80 to 85
2/30 ¼ to ⅜	58 to 62½
1/40s half blood French spun	75
1/30s half blood French spun	70

FIRTH & FOSTER CO.,

Dyers and Finishers of

Dress Goods, Men's Wear and Cloakings, such as Venetians, Armures, Soleils, Crepons, also Silk Warp Fabrics, Cotton Warp Linings, Suitings, Clays, Serges, Worsted Damasks, Tapestries and Shirtings.

Particular attention given to fast colors on cotton and worsted yarns, slubbing and stock dying.

Special black for the silk trade on fine cotton yarns.

MAIN OFFICE AND WORKS:
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BLEACHERS AND FINISHERS OF

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70TH STREET, ABOVE HAVERFORD ROAD,
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PROVIDENCE MILLS COMPANY,

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Of all classes of LINEN GOODS.
Toweling and Damasks a Specialty.

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White Card Strips
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White and Colored Oily Card
White and Mixed Colored Soiled Card
Peeler, Sea Island, and Egyptian Comber.

SAMPLES ON APPLICATION.

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Maker of Cotton and Wool Shoddies. **Amsterdam, N. Y.**

ORGANIZED 1866.

HARTFORD STEAM BOILER INSPECTION AND INSURANCE CO. HARTFORD, CONN.

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INSURANCE against Loss or Damage to Property and Loss of Life and Injury to Persons caused by

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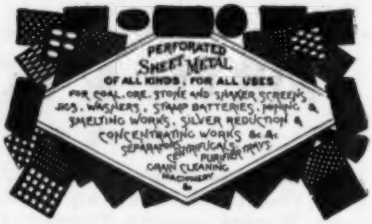
Carbonized Stock A Specialty. **FLOCKS**

A. J. Beckley & Co.



Garwood, New Jersey.

PERFORATED COPPER

For Wool Scouring, Renser Boxes and Dyers of Raw Cotton.

Screens Especially for the Woolen Mills. . . . .

Correspondence solicited.

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CLEANS WOOL, FLOORS ANYTHING.
INDIA ALKALI WORKS, Boston.

SHODDY, WASTE AND RAG MARKET.

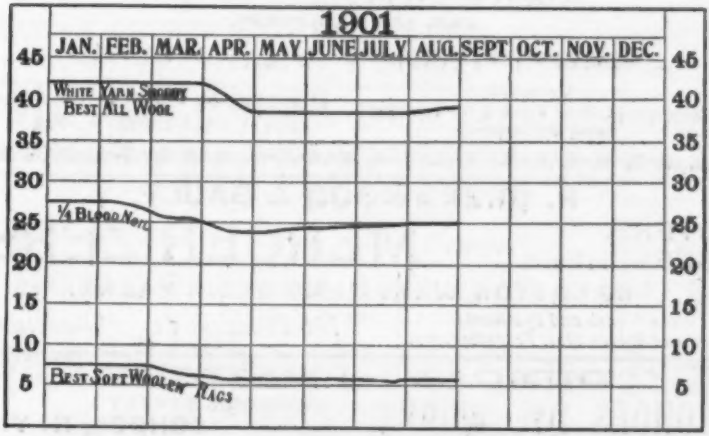

CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

Shoddy, Waste and Rag Market.

The month just passed has shown a decided increase in sales and an advance on some lines of shoddy. The prices obtained have been below those of last winter, but the general feeling and upward tendency indicates a better outlook than that of the preceding months. The bulk of this business is undoubtedly due more to the last orders on heavy weights and denotes the final flicker of that season rather than to lightweights. It is well to note, however, that some business has already been done in shoddies for the coming trade and that a conservative business is to be expected. During the past four or five weeks, medium fine and medium coarse darks have received the most call. Considerable attention has also been paid to delaine extracts. At the present writing, the market is easing off slightly, though the proximity of the fall trade will tend toward keeping it steady.

NOILS AND WOOL WASTE.

The supply of noils has not increased during the last month, and good noil is a ready seller at the prices quoted today. The conservative way in which the worsted mills have produced noil during the last year, and the fact that their recent activity has not yet affected the noil market will hold prices firm for a considerable time. A higher price has been asked for ⅝ blood, but it is not generally conceded that it has been obtained. Other grades are quoted at the same rate as during the preceding month. Wastes are quiet and only slow movement has been noted in the past few weeks.

RAG MARKET.

The rag market has shown scarcely any change during the past month, though there has been more demand for blue stocks than during July. A tendency to ask a little better prices has been noted in some quarters, but so few deals have been made on this basis that it is hardly worth mentioning. The indications, however, point to holding the schedule up to its present figure, at least until more is known about the season now at hand. The increased trade in shoddies seems to have been reflected only in the shape of a better feeling and the belief that the fall will bring a steady, though conservative trade.

SHODDIES AND EXTRACTS.

White yarn, best all wool	38–40
White knit, all wool, best, fine	28–32
White knit, No. 2	25–28
Light yarn, extra fine	25–28
New pure indigo blue	23–25
Fine worsted, new black	24–26
New blue clip, best, fine	20–22
Dark mixed yarn, extra fine	22–24
All wool yarn, medium and coarse grades	18–20
Merino.	
Fine light, all wool, No. 1	24–25
Medium light, all wool, No. 1	16½–17½
Medium light, all wool, No. 2	14–16
Fine black, all wool	18–20
Fine dark, all wool, No. 1	18–19
Medium dark, all wool, No 1	12–15
Medium dark, all wool, No. 2	11–12
Red knit stock, strictly all wool	19–20
Red flannel, all wool	18–20
Dark blue for hosiery, strictly all wool, No. 1	17–20
Dark blue for hosiery, not all wool, No. 2	12–14
DELAINE EXTRACTS.	
Light	17–19
Medium light	15–17

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Black	13-15
Fancy colors	16-20

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Fine merchant tailors, all colors	8-9
Choice light colors	12-14
Browns	12-13
Blacks	9-10
Fine blues, plain	10-11
Fine dark	10-11
Medium dark	6½-7½
Worsteds.	
Blue	15½-16½
Black	18-20
Serges.	
New blue	14-15
New black	14-16
Flannels.	
New scarlet	17½-18½
New blue	15-16
Cloakings	3-4

SOFTS AND KNIT STOCK.

Soft woolens, best	5½-6
Old white flannels	17-18
White flannels, No. 2	11-12
Old red flannels	9-10
Light blue flannels	7½-8½
Old blue flannels	6½-7
Old plaids	5-7
White stockings	18-20
White hood stock	21-22
Clear hoods	8-9
Red Stockings	9-10
Blue stockings	9-10
Fancy stockings, No. 1	7-9
Grey stockings	8-10
Black stockings	8-9½
Knit stock comforters	7½-8½
Red knit	9-9½
Light grey knit	7½-8
New light fancies	14-15
New fancies	11-12
Merinos.	
Light, fine	12-14
Light, coarse	6½-7
Fine dark	8-9
Dark, No 2	5-5½
Coarse dark	4-5
Blue	10-11
Blue—seamed	12-14
Black—unseamed	9-10
New black	18-20
Small	2-3
Bunting	6-8

NOILS.

Australian	48-55
Fine domestic	40-45
½ Blood	35-40
⅜ "	2 -32
¼ "	23-26
Braid	22-25
Carpet (white)	14-18
Carpet (colored)	10-12½
Seedy.	
½ Blood	25-30
⅜ "	20-25
¼ "	17-22

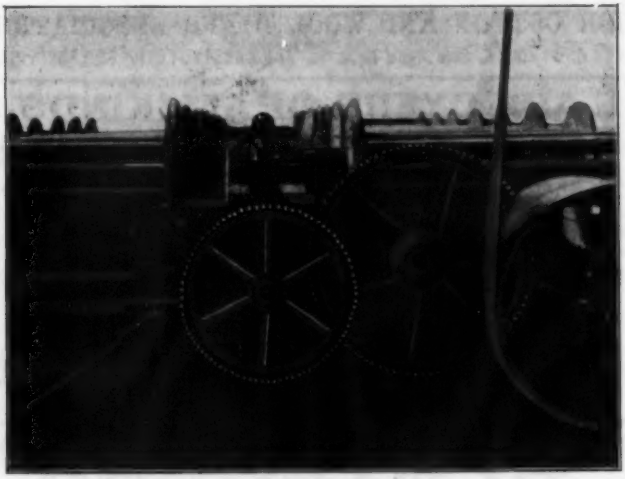
FLOCKS.

Shear, fine white, all wool	13-15
Fine Indigo blue, all wool	8-9½
Fine black, and blue, all wool	7½-8
Fine dark, all wool	6-6½
Gig, fine, all wool	3-4
No. 1, black all wool cut	5-6
All wool, fancy, shear and gig	2½-3½

A NEW DYEING MACHINE.

The invention of a practical dyer who is using it with perfect success.

It is simple, very much cheaper than other machines, does uniform work, and requires no attention.



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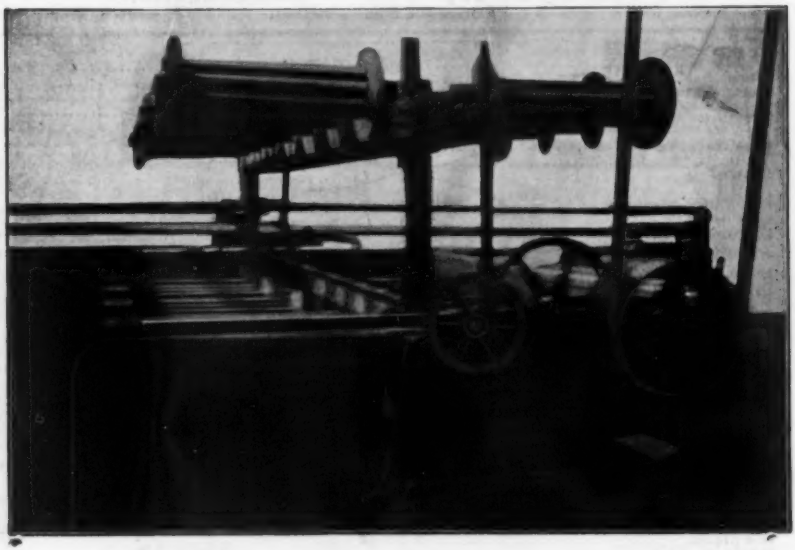

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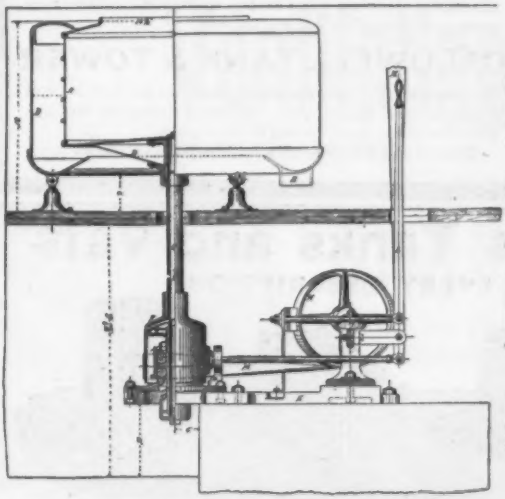

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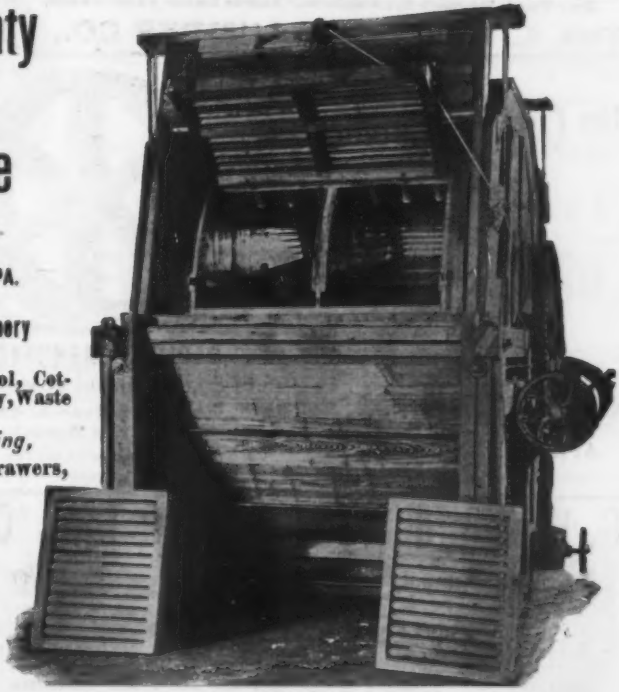

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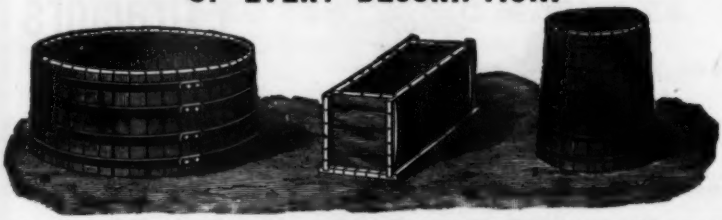

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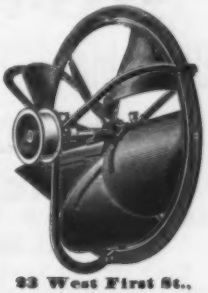

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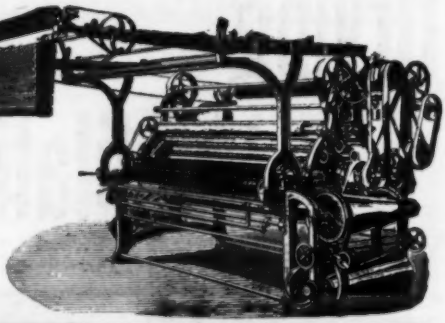

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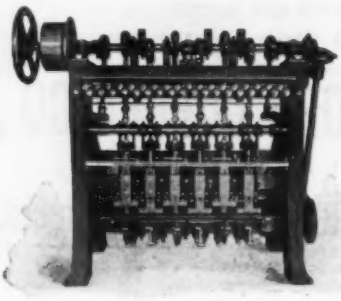

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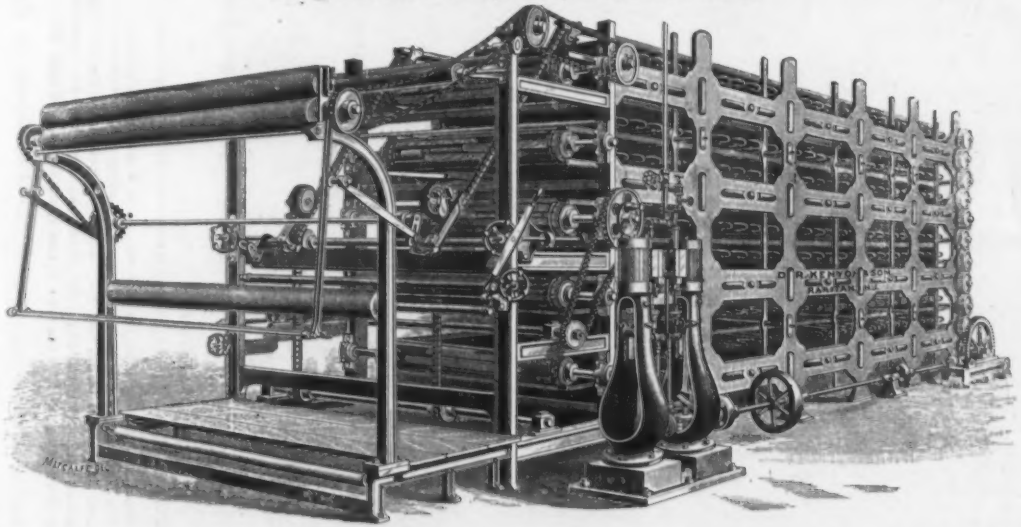

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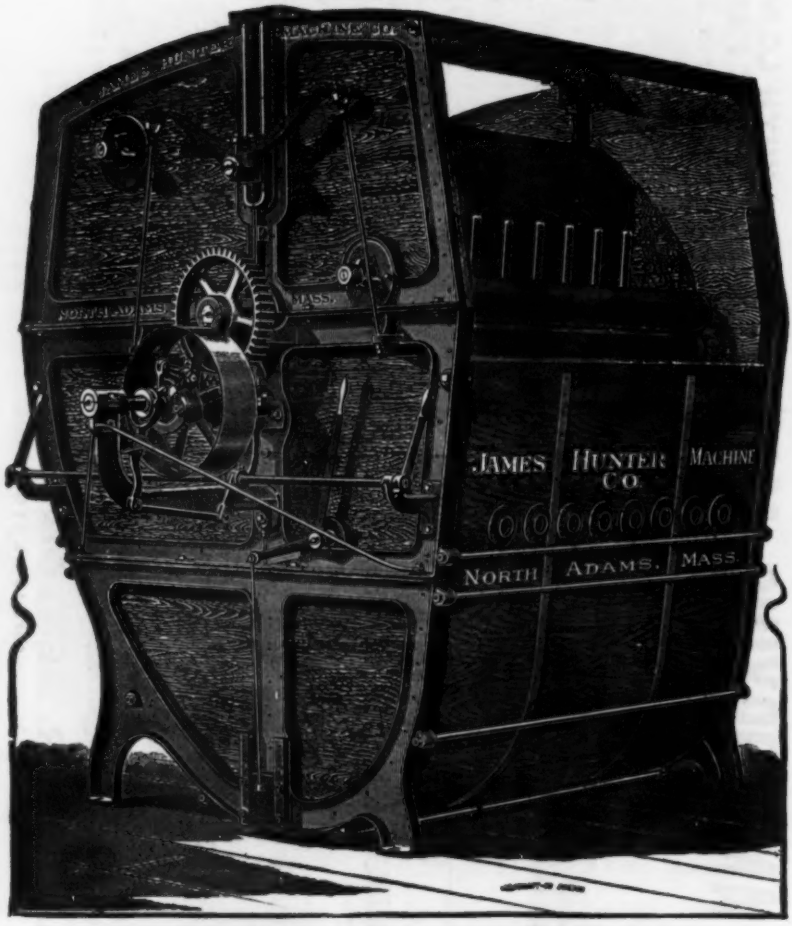

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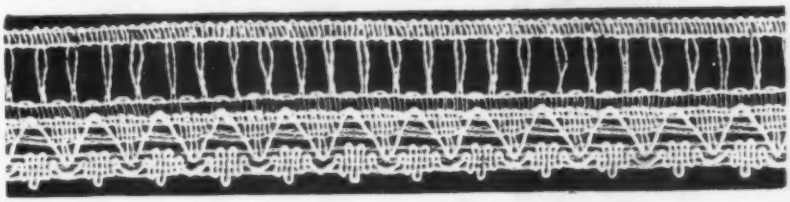

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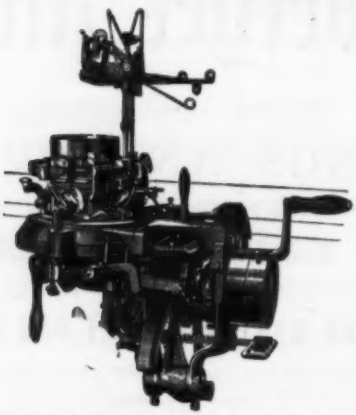

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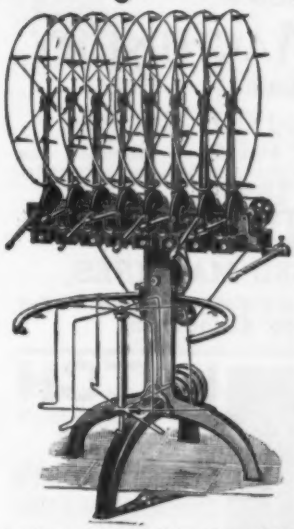

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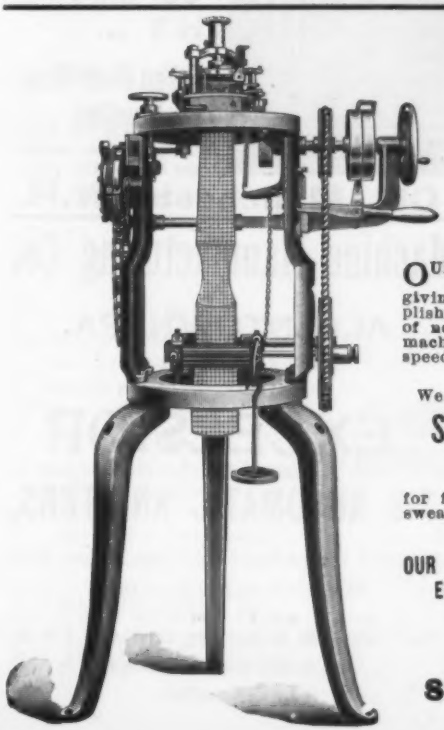

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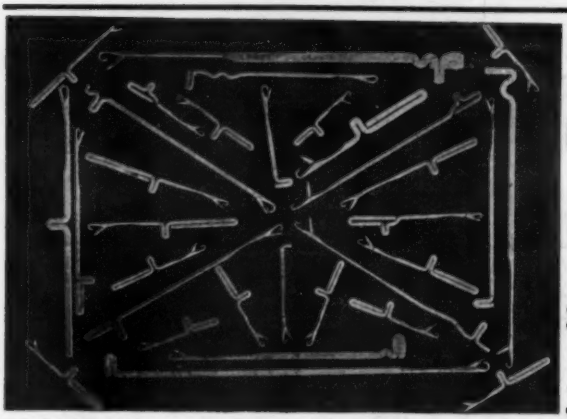

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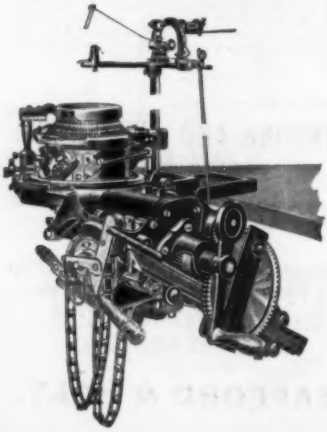

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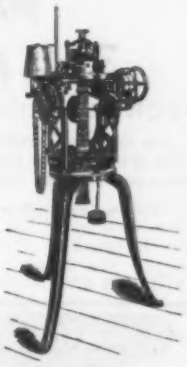

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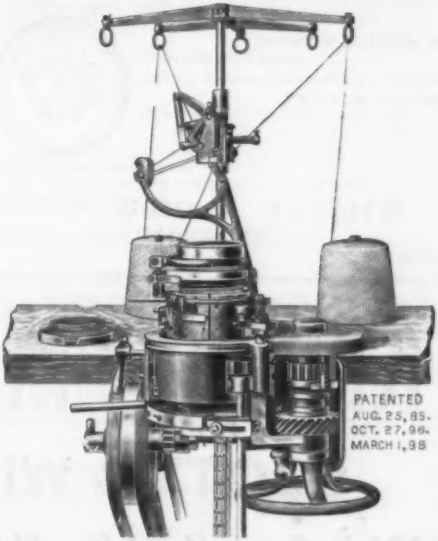

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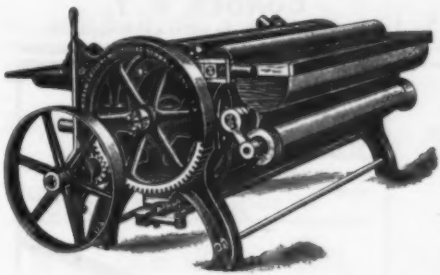

This machine irons and presses ribbed and flat underwear, giving a fine smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

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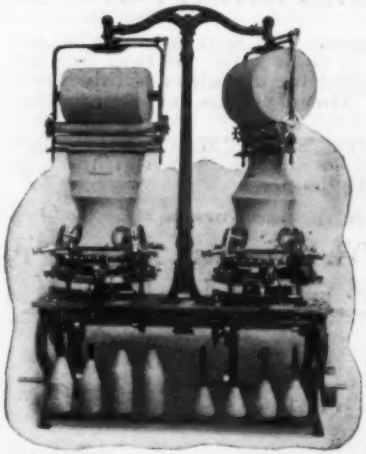

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Knitters, Winders, Burrs, Attachments.

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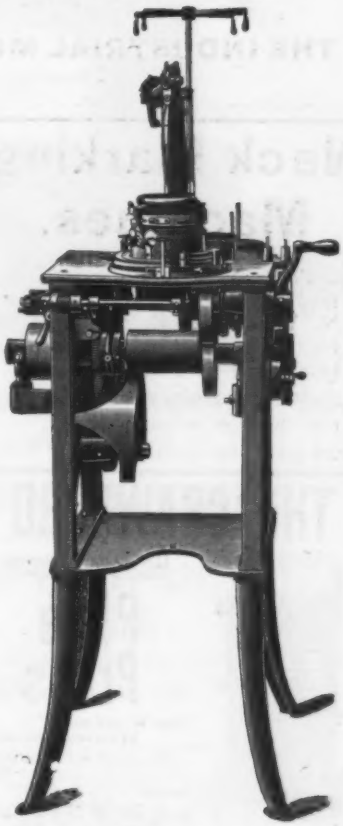

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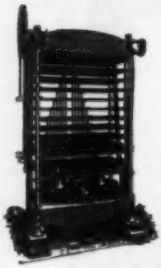

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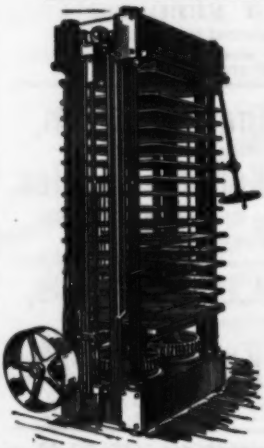

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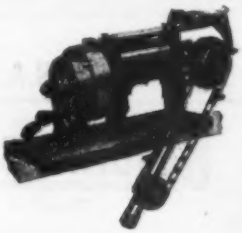

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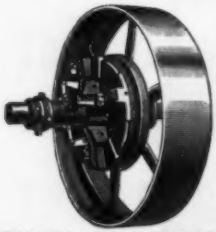

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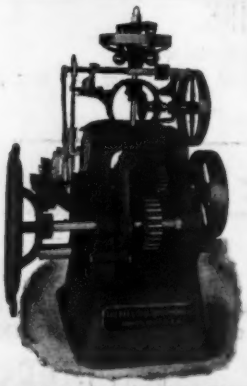

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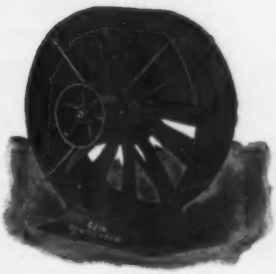

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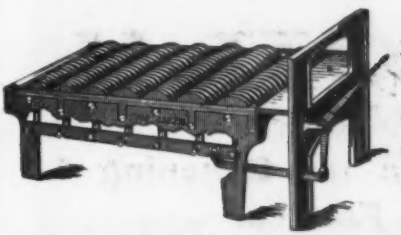

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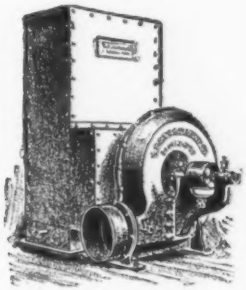

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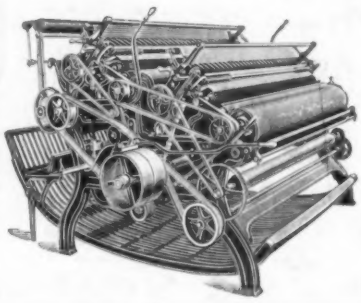

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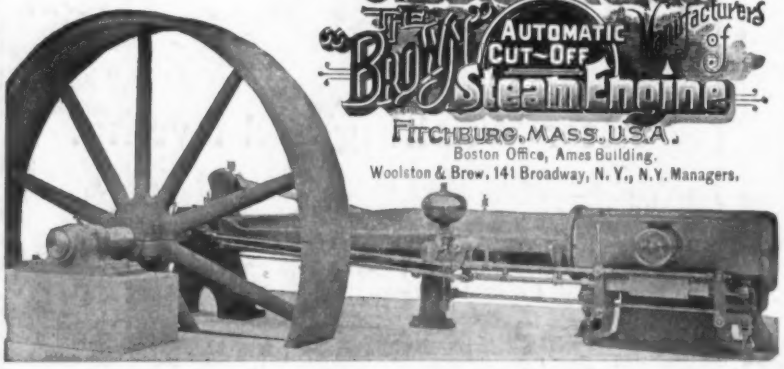

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